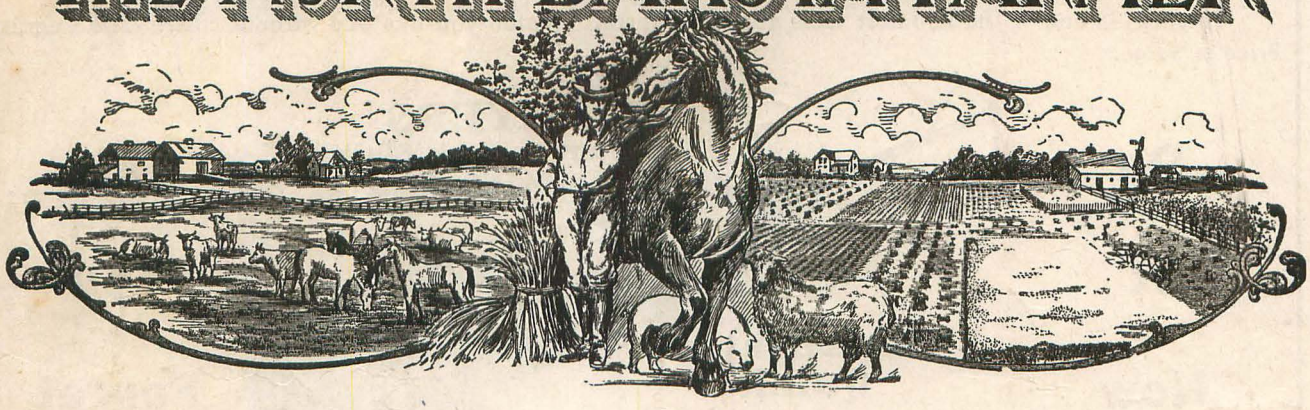
THE NORTH DAKOTA FARMER



"THE NORTH DAKOTA FARMER FOR NORTH DAKOTA FARMERS"

Vol. 13 · No. 12 Lisbon, North Dakota, June 15, 1912 50 Cents A Year

Six Hundred Sheep Ready for Market on the Ranch of E. E. Strong, Pingree, N. D.

THE NORTH DAKOTA FARMER

Vol. 13, No. 12 | LISBON N. D., JUNE 15, 1912 | 50 Cents a Year

AGRICULTURAL PROGRESS

By J. H. WORST

The numerous development leagues recently formed on the Missouri Slope and in the west-Missouri country indicate a commendable desire on the part of farmers to promote a better system of farm management than they have hitherto practiced. The Better Farming Association also is working along eminently practical lines for the improvement of farm practice in many counties of the state. At the same time, ex-president James J. Hill is spending considerable money in the territory traversed by the Great Northern Railroad and its branches, for the improvement of agriculture. In addition to all this, nearly half the counties of the state are preparing to hold industrial fairs during the summer and fall.

The Better-Farming train conducted jointly by the Northern Pacific Railroad Company, the Farmers' Institute and the Agricultural College, is carrying the most practical sort of education to the very doors of the farmers. A government expert also has been located in the state to direct and correlate the work of the Farm Husbandry Alumni Association and others, with a view to building into the agricultural structure of the commonwealth such approved methods of farming and animal husbandry as are regularly taught at the Agricultural College.

All the above named movements would indicate a general awakening, not only among farmers but among business men as well, to the needs of scientific farming. Neither should the fact be overlooked that the bulk of the expense involved in the movements just enumerated is being borne by private individuals or by private business corporations.

Favorable Climatic Conditions

No state can boast of better soil, more sunshine, or better climate conditions for producing wheat, barley, potatoes, or flax, nor are the climatic conditions of the state much inferior for the production of corn, hay, and many other crops. There is also abundant precipitation to meet the demands of agriculture if the moisture is conserved instead of being permitted to evaporate at will or to be drawn out of the soil by injurious weeds. The losses sustained hitherto on account of drought should be charged to ignorance or neglect on the part of farmers rather than to insufficient precipitation. True; there is no moisture to waste. Farmers cannot expect, however, to allow any considerable portion to be needlessly lost during any season of the year, and still have enough to produce profitable crops with regularity. When the principles of conservation of moisture, therefore, are thoroly understood and practiced, which among other things, involves plenty of humus in the soil in the form of manure, freedom from weeds, and abundance of cultivation, the evil effects of drought will be dispelled.

Nevertheless, a higher degree of intelligence is required to farm successfully in North Dakota than in many other countries. The intelligence referred to has no reference to algebra, solid geometry, or ancient history, but to the forces of Nature —to the means of production, and how to direct the former and to utilize the latter. Intelligence of this character, aside from its utility, is even more elevating and more closely related to the humanities than much that is taught in colleges and universities and denominated "culture study." The study of agriculture even would not be out of place in a theological seminary. Indeed, if the judgment of Christ in selecting material for His parables is worth anything, agriculture would be very much **in** place in such institutions.

More Attention Should be Given to Agriculture

When the citizens of the state direct their attention as largely to the development of agriculture and its possibilities as its importance warrants, there will be no end to our common prosperity. The means are at hand—incorporated in the soil—and all that is required of the farmer is for him to arrive at a thoro understanding of what should be done and when and how to do it. However, a state enjoying such tremendous natural advantages as North Dakota, especially advantages which bear directly upon the production of food—the chief essential of life, should spare neither time nor expense in utilizing them to the very utmost. This requires education as well as labor. An agricultural state should spend as much money on agricultural education, and equipment for such education, as upon all other types of education, to be half way consistent—tradition to the contrary notwithstanding.

The fact that food is becoming scarce, in proportion to population; the fact that our grain yields per acre are decreasing while the national population is rapidly increasing should convince every thinking person that any state capable of producing bread material in abundance has a relative advantage over most others, and that commonsense would indicate the propriety of utilizing that advantage, especially when the public welfare, rather than selfish desires, is thereby promoted.

The significance, therefore, of the many movements looking toward improved agriculture is apparent.

Bread Line Near at Hand

The United States is not far removed, already, from the bread line. Production in the United States is not keeping pace with increasing population. The lands that may yet be brought under irrigation and the swamps that can be reclaimed by drainage and rendered productive cannot more than keep pace, for a limited period of time, with the bread demands made by our ever-increasing population. Soon two blades of grass will have to grow where one grows now.

Not only will two blades of grass have to occupy the place of one but it is high time that farmers determine who shall enjoy the extra blade. In other words, the country demands more producers and fewer middlemen. Middlemen are a necessity and render useful service, manifestly, but they are becoming more numerous than business conditions warrant. The professions also are overcrowded. Thousands are eking out a precarious

existance simply because society has no use for so many of them. They inject themselves with extreme cleverness into the social, professional, and business world and demand a living. They demand the best there is and proceed to take it. How long this will be permitted remains to be seen. Far better for them and for the public welfare if fully one-third of their number would remove their boiled shirts, don overalls and engage in some productive calling.

However, the very popularity that seems destined to come to agriculture thru the agencies now in the field, for its improvement, should tend to direct young men and young women of education more largely into productive channels instead of away from them.

Our modern educational ideals, the legitimate offspring of the agricultural colleges, also tend in the same direction. The teaching of elementary agriculture and nature study in the common and secondary schools, the training offered in domestic science to school girls, and manual instruction given to boys, in the villages and cities, all tend toward popularizing productive occupations and the establishment of the American home on a more substantial and popular basis. All this does not necessarily mean the exaltation of the material side of life at the expense of the spiritual, but rather the crowning of the material, (which is absolutely essential) with that intelligence and refinement—with those lofty ideals which hitherto have been too much associated with or monopolized by the non-productive classes and by leisure people. The man that knows how to make money by productive labor while living properly and largely, and who can use his wealth in the best way should be considered a model citizen, rather than the man who accumulates wealth by his wits or by sharp practices.

LIGNITE PRODUCTION INCREASES

Figures of the United States Geological Survey Show the Production of more than Half a Million Tons in 1911.

The production of coal in North Dakota in 1911, according to figures obtained by E. W. Parker and made public by the United States Geological Survey, was 502,628 short tons, valued at $720,489. This is the first time in the history of the State that the production has amounted to more than half a million short tons. North Dakota was one of the few Western States whose production in 1911 exceeded that of 1910, whereas in 1910 it had been the one State of the Rocky Mountain and Great Plains provinces that showed a decrease. The production in 1911 exceeded that of 1910 by 103,587 short tons, or 25.96 per cent, in quantity, and by $125,350, or 21.06 per cent, in value.

The total production of coal in North Dakota and the increase in 1911 over 1910 are not of really great importance when compared with the output of coal in most of the other States, east or west, yet both are significant as indicating considerable success in the efforts to utilize this local fuel resource, which is of low grade compared with the coals from other States that are brought into competition with it.

Can Supply Local Demand

The development and utilization of the lignites of North Dakota, as of Texas, must depend on relatively local markets, for as they disintegrate rapidly on exposure to the atmosphere they do not bear long transportation and must be used a short time after being mined. Lignite is not a high-grade fuel and on account of its large moisture content does not reach high temperatures in combustion. It is therefore undesirable for steam raising, tho it can be used for that purpose in specially constructed furnaces with large grate areas. It does, however, serve fairly well for a domestic fuel where other coals are obtainable only at a high price. It has also been found, on account of its smokeless and sootless qualities, well adapted for burning brick, one of the few manufacturing industries of North Dakota, and considerable quantities are burned each year in brick kilns at Dickinson, Scranton and Kenmare.

Makes Good Briquets and Producer Gas

The University of North Dakota has been conducting some interesting experiments on the utilization of lignite for gas-making and in the manufacture of briquets. A plant operated by the School of Mines of the University has been located at the mining substation at Hebron. In a letter dated April 23, 1912, Prof. E. J. Babcock, Dean of the College of Mining Engineering, says:

"We are doing a very large amount of research work at this plant on the use of various binders, the best methods of preparing the coal, as well as the best methods of mixing and pressing. We are improving our plant and enlarging it at the present time, so as to get data more nearly approaching those of a commercial plant. Thus far we have made but small quantities of briquets, but by the methods which we are working out we have gotten very excellent results.

"The briquets are of high grade, stand well in the fire and on exposure to atmospheric agencies. They are of high heat value, being raised from 7,500 or 7,800 in the raw lignite to about 12,000 British thermal units in the finished briquets. After the improvements are completed which we are now making our experimental plant will be able to run uniformly at a rate of 10 tons per day. We operate a gas plant in connection with the lignite plant, thereby generating gas from lignite and briquetting the residue. This residue gives a high heat unit briquet.

"We condense about one and one-half tons of raw lignite into 1 ton of briquets in this manner. The gas and other by-products are saved. We derive approximately 10,000 cubic feet of 400 British thermal unit gas per ton of reasonably dry lignite. We have tried a great variety of binders and methods."

A bulletin giving a complete description of the plant and of the work proposed to be done was published by the University in 1911.

Altho lignite, as stated, is not a satisfactory steam fuel, investigations have shown that it is exceedingly well adapted to the manufacture of producer gas, and as the producer and the internal combustion engines come into more general use the formerly despised lignites of North Dakota will be found to possess great potentialities in the settlement and upbuilding of the State.

The North Dakota mines were practically free from labor troubles in 1911, only two interruptions to work for this cause being reported. One of these was settled in 24 hours, the other lasted three and one-half days.

THE BUSINESS OF FARMING

J. R. Waggoner, of the I. H. C. Service Bureau

A great deal has been said in a jocular way about the razor-back hog and his sun-splitting abilities, but it is a very encouraging fact that he is rapidly becoming extinct. His happy hunting rounds consist now of only a small part of the total hog producing area. He has been succeeded by the more domesticated and more highly developed type of hog, which someone has properly dubbed "the mortgage raiser." Many farmers can easily attribute the possession of homes, wealth and all that goes therewith, to the domesticated hog. His place in the scheme of industrial progress has been won not by any unusual train, but is largely due to the fact that his profitableness is a result of instinctive economical habits. By nature he seems to fit into the whole scheme of farming as a utilizer, to the best possible advantage, of many of the farm products that would otherwise be a total loss.

We can draw a very valuable lesson from this all but artistic animal, whose only language is his squeal of disapproval and his sturdy grunt of satisfaction. He saves where others waste, and makes his living by rooting around—sometimes in places where wanted, sometimes not. If there is anything within reach that he likes he usually finds it and proceeds to

make good use of the opportunity without any manifest concern or excitement. He seems to make it his business to look after small things, even the holes in the fence if the outside looks more inviting.

Profitable farming is becoming more and more a business proposition in which it is necessary to look after the small things and to use to the best advantage every opportunity to produce more economically. The best and most profitable farmers have adopted systems of farm accounting, or, in other words, they have become bookkeepers,—have kept such complete records as to enable them to determine which fields were profitable and which were not. To begin with, it is not absolutely necessary to follow up all little details, but it is a good plan to do so as completely as possible.

If we were to go into a manufacturing plant, one of the first things to impress us would be the system of doing things and the strict principles of economy that are followed. All products that can be used for other purposes are saved, properly stored, and used when the time comes. At the end of each month, and possibly each day, the manager knows the exact status of affairs—the amount of stock on hand, and the quantity of finished product ready for the market. Every part of a great machine is numbered and each must be accounted for.

If the same unsystematic methods were practiced in factories as are used on some farms, they would soon lose their identity with the world's progress, and become nothing but idle monuments to some man's failure. On careful consideration it is plain to see that with farming it is as important, if not more so, to keep definite and strict records of all expenditures of time, money and labor.

The space alloted to this article will not permit a detailed explanation of all the possibilities of an accounting system on the farm and what it will accomplish, but carefully kept records will be an index finger to point the farmer to loop holes thru which the profits are now slipping. He would know which are the profitable fields; which are the most profit producing crops; which cows were boarders, that he might at the end of the season sell such animals to pay their board bills; he would know whether he was utilizing his horse power to the best possible advantage. In this connection it might be said that one of our foremost universities has just found that on a 160-acre farm, equipped with six splendid head of work stock, the average daily labor per horse was only a little over three hours for the entire year—a very small average labor record, indicating a lack of efficiency.

Well kept accounts would enable us to determine the most satisfactory way of utilizing our dairy products. Experiment Stations have found that the cream separator reduces the loss of butterfat per cow to one-eighth that of the deep setting; one-twenty-first of the shallow pan, and one-thirty-third of the water dilution methods of cream separation. This shows that the ordinary farmer who is milking ten average cows, figuring butter at the market price, will save more than the price of a separator in a single season. It not only is economical from the standpoint of obtaining more of the butterfat from the milk and other methods of cream separation, but makes it possible to utilize the milk before it has undergone the action of detrimental bacteria, to which it is very susceptible. Every farmer knows that milk as it comes fresh from the separator is in the most wholesome condition for feeding young pigs and young calves.

The average cream separator will remove practically all of the butterfat from the milk. Many tests show that the loss is often as low as .02 of one per cent. Perhaps you will say that the fat left in the milk is not lost, because it is utilized by the calves and pigs to which it is fed. We agree with you in this perfectly, but let us look at it from a financial and economical standpoint. The butterfat if sold on the market will bring at least twenty-five cents a pound. In comparison with this, the fat required for growing animals may be supplied in the form of corn and other grains at a cost of at least one-tenth the value of the butterfat, and at the same time this feed will supply other elements which are necessary for the growing animal.

We hear a great deal said nowadays about maintaining the fertility of the soil. We all know that if grain is sold direct on the market that we deplete the fertility of the land very rapidly. The next best system of farming is stock raising for meat production, and the best of all systems for maintaining the productivity of the land, and at the same time reap profits therefrom, is dairying—not selling the whole milk but selling butter only.

In dairy farming the soil fertility removed is very much less than in any other kind of farming—in 400 pounds of butterfat there is less than 1 pound nitrogen, two-tenths of a pound phosphorus, and one-tenth of a pound of potassium.

Only by following some system of farm accounting can we know these things and be able to weigh in the balance the returns from each field from each kind of stock and from every farm operation.

CORPORATION AND COOPERATION

W. C. Palmer, Agricultural Editor, N. D. A. C.

Corporation is the method of modern business organization. By this means several people put their money together so as to gain the advantage that comes from a larger amount of capital. The building equipment and running of a railroad, for instance, requires more money than one man has, so many people put in their money—in some cases thousands. The building and equipping of a factory usually requires more money than the one starting it possesses. By others putting in their money the factory is made possible. In one sense the corporation is a cooperative affair. It is many people working together with their money for the good of each other.

The corporation does not lend itself so well to the organization of farm business, but the underlying principles of the corporation, that is cooperation, is admirably adapted to farm affairs. In this case it will not be only money that is put into the cooperative affair but it will be the producing of farm products, marketing farm products, social life, credit, good will, education.

In the producing of farm products, there are two ways of cooperating—cooperation in the growing of some one crop, as potatoes, producing of the one variety working towards a high standard of quality so as to make the locality known for that one particular kind and quality of potato. In stock raising, grow one kind of stock and that of a high quality so as to make the locality known for this.

The other way of cooperating in growing the crop is the cooperative ownership of machinery that is expensive and not much used, as silage cutters, potato planters and diggers, traction engines, sires, etc.

Where there is cooperation in production it will not be difficult to bring about cooperation in marketing such products as potatoes and butter and in buying such things as machinery, binder twine and coal.

Cooperation in education is being worked out thru the consolidated school. This is being further developed thru Farmers' Clubs, where farmers exchange their experiences and observations. The social life and religion need to be closely united. The church should be the leader in the social life. The denominations should come together and agree on one church and make that a strong one instead of having several weak ones.

Farmers could well cooperate in the establishing of credit associations or at least in borrowing money. If farmers had an organization and this would stand back of loans, there is no reason why money could not be secured for 5% and 6% where 10% and even more is now the rule.

Cooperation will do for the farmer what corporation has done for business. The marvelous development of modern industry and business could never have come except as a result of the corporation which enabled people to work together, or if you please, to cooperate—likewise a rapid development will come in farming when proper use is made of cooperation. Each one working by himself will not get far, either in business nor in farming.

GOOD ROADS

COUNTRY ROADS

McNeal C. James

One of the chief drawbacks to country life in the past has been that of poor roads. This objection has been overcome in a great many places but in the majority of country communities the roads are in bad shape during a considerable portion of the year.

Few things are more important to country people than good roads. People who live in communities where roads are in bad condition, suffer in an economic, educational, social and a religious way. The attendance upon religious and social gatherings is often very small because it is practically impossible for those living at some little distance away to get thru some portions of the road. Children are often compelled to remain out of school for the same reason. One of the greatest hindrances to consolidation of rural schools in many townships is the bad condition of the roads. The transportation of grain and other farm products is impossible, often, just at the time when such things should be marketed.

In some ways the roads in our state have a big advantage over those of the central west. In the first place we have a much smaller rainfall than farther southeast. Our soils are a little more sandy in many places and the water which does fall tends to enter the ground more quickly than if the soil were more clayey.

In some places, however the roads are in poor condition. Much of the surface of the country is rolling and often hilly. In many of these sections there is a very poor grade. That is, the hills have never been cut down or the depressions between them filled in. Often swampy places are not graded making it necessary to go far to get around them. During certain times of year these stretches of road are bad.

Where the surface is very unlevel the drifting of snow often makes the roads almost impassable. Spots of sticky, greasy, soil known as gumbo often occur in these regions. These soils make a very poor road during wet time of year.

A strip of bad road along with a fairly good road always limits the load one can haul. The old saw "A chain is no stronger than its weakest link" might well be applied to roads and say that a road is no better than its worst spot.

When one considers the large amount of produce the farmers of our state must needs haul, and the distance most of it is pulled, he can see how very important good roads are to him in this regard. Besides many farmers and townspeople make much use of automobiles. These make good roads quite desirable.

The most needed immediate improvements in our roads are:

1. The establishing of better grades in rolling sections.
2. The grading up of level stretches.
3. Draining of low areas.
4. The gravelling of certain of the worst places where the soils are gumbo in nature.
5. The constant use of the King road drag.

ROADS BUILDING IN ITS NEWEST PHASE

Even France, with its great system of national, state, and county highways, now realizes that the intense use of the roads demands changes in construction and more thoro maintenance. This fact was frankly voiced by Councilor of State Chargueraud, who is the inspector general of bridges and highways and director of roads and navigation, of France, whose admission came at the dinner given in his honor, at Washington, May 21, by Logan Waller Page, director of the U. S. Office of Public Roads of the Department of Agriculture, who is also the president of the American Association for Highways Improvement.

It has ever been argued that modern road making should meet the new conditions which have been imposed by twentieth century locomotion, which means not only automobile traffic, but that of all other vehicles as well. The National Good Roads Board of the American Automobile Association has agitated for this end, and the sum and substance of the best engineering practice thruout all modern road building nations, (and all are struggling towards the same end, whether it be France, with the best roads in the world, and the most of them, or Guatemala with equally good roads but few) is to take into consideration the combined intensive traffic of everything that goes on wheels.

This was the argument put forward at the Willard hotel banquet, the guest list of which included M. Jusserand, the French Ambassador, Secretary of Agriculture Wilson, and Chairman George C. Diehl, of the A. A. A. Good Roads Board.

It was in reply to a query propounded by Frandis Miltoun Mansfield, the A. A. A. spokesman of the occasion, who addressed the distinguished foreigner in his own tongue, that Monsieur Chargueraud said that while the automobile was primarily not the road destroyer that its opponents claimed, it, in conjunction with a heavy horse-drawn traffic as well, was bringing about conditions which were well nigh insupportable unless combatted with the best forces possible in the light of the science of modern road-building.

During the course of the speeches this one insistent thought was reiterated by M. Chargueraud, M. de Pulligny—the head of the French Mission of Engineers and M. de Joly, engineer in chief of the Bridges and Highways of Paris, now visiting the United States—was that old-time road conditions no longer obtained, and that new formulas of road building, and a new application of public funds will necessarily be made by the central controlling body for roads building and roads improvement, which in France is the National Government, as indeed it should be in connection with national routes in any country where the interests of the whole people are at heart.

It matters little whether the medium thru which this money is to be distributed is the Department of Agriculture or the Department of Commerce and Labor; the point is, that centralized control, and centralized control only, will assure the proper application of any national funds which may be available.

Another question which was brought up was the advisability of the United States forming a part of the International Association of Roads Congresses, being now the only nation among the great powers not officially represented. This is advocated by the American Automobile Association, which in its organic capacity is the only American affiliation of the League of International Touring Associations. For this reason it is vigorously contended that steps should be taken, and that publicity should be given, as to the desirability of the United States taking an official part in this important international work, and to the end of ultimately bringing one of these international congresses to America for its meeting place. The next congress will be that in London in 1913, when every effort should be made to bring the gathering to follow to the United States.

WAGON ROADS

W. C. Palmer, Agri. Editor
N. D. A. C.

Wagon roads are to the farm what the railroads are to the town and city. What would happen to a city if it had such railroads that they would have to charge two or three times as much for freight and passenger traffic as to some other city otherwise equally well situated; or the road bed so poor that only slow time could be made; or that the roads would be impassable during parts of the year? We know that no city could maintain itself under these conditions.

These are preposterous statements to make of a railroad; but they are the conditions that often maintain on country roads where the expense of hauling is in many cases two or three times what it should be, where the road is such that it takes two or three times as long to get to market as it should, where the roads are not in condition for hauling loads at all times. This works to the detriment of the farm and its industries just as much as that kind of railroad would work to the detriment of a town or city.

THE WELL OR UNDER GROUND SILO

E. K. Clark, Lincoln, Nebr.

This type of silo or pit is being promoted by a few institute men who have had little or no experience with Silos but favor it thru a mistaken idea that it will be a cheap construction and a popular theme to talk.

The labor of digging such a pit certainly means much of an expense, and to excavate a round pit or well with a dimension of 14 or 16 feet in diameter and 28 to 30 feet deep means a lot of very hard labor. It cannot be dug by scraper but must be all handmade, and requires much labor of the hardest kind. I am not familiar with the cost of excavation in our hard clay and loose soil but I do know it is slow and tedious work, and would require considerable time.

I have based my conclusions on observations covering over 25 years and am free to say I have known very few underground silos that could be counted a success in any sense of the word. Many of our soils will not stand for such a construction, owing to the dangers of caving, coming in contact with sand or even striking waterveins. Therefore the system would require to start with a special kind of soil and could not be generally recommended. The spoiling of the ensilage close to the cold wall would be quite certain. I wish to call your attention to the digest of a Bulletin published by Storrs Experiment Station. This Bulletin is an able piece of work, gotten out after 5 years of investigation by scientists, their conclusions point emphatically to this fact, that a non-conducting wall is necessary for the perfect keeping of silage. The soil always being cold, the walls will conduct away the heat and cause spoiling of the silage next the wall. This one fact is sufficient to discourage the method.

The labor of getting out the silage from such a structure is certainly a matter of no little importance. Practically all the cutters now on the market are arranged with blowers so that the ensilage can be easily blown into the silo, no matter how high it may be. An average cutter will put into the silo from 75 to 100 tons per day. This is done by a power which is economic in its nature. On the other hand, the silage must be taken out from twice to three times per day for 200 days in the year. The elevation of this certainly would require time and labor, and this multiplied by the number of days would be a large item each year sufficient to off-set the initial cost to say nothing of the inconvenience and discouragement of the work. It is not difficult to throw out a ton of silage in an ordinary silo in ten to fifteen minutes. It can drop into a recepticle which can be conveyed directly to the animal. It would require at least two or three times the labor and time to get this ensilage out of an underground silo.

The danger from carbon dioxide gas forming in the silo is well known among those who have used this form of structure, or for that matter it is even found in wells. Such a gas is extremely dangerous and has caused death when the person could not get out quickly. Being a heavy gas, it is difficult to get rid of. In Breeders Gazette, there is an account of a silo underground that contained this gas.

The convenience of location of the silo is another matter of much importance. It often occurs that by locating the silo in a certain place, much labor can be saved. This place might not be at all desirable to sink a pit or well, while an above ground silo could be placed anywhere.

The general appearance of such a structure would certainly be minus, while a fine above-ground silo adds much to the appearance of the buildings, and gives a valuation to the place that is of no small accounting. Taking all things into consideration, I believe your people will find it decidedly advisable to put up the above-ground silo.

WHY EUROPEAN FARMERS DON'T TALK ABOUT "WORN-OUT LAND"

The farmers of Europe do not talk of worn-out land as we do in America. They take better care of their land, and, by intensive farming, make it produce more. The following is taken from an article in "Farm and Fireside":

"The American farmer has swept across the continent, leaving abandoned farms and worn-out fields in his wake, until now we have come to the point where all our arable land has been occupied, and we can no longer wear it out and abandon it. We must not only maintain ourselves on the land we have, we must maintain a population that will soon be double and treble what it now is.

"Where should we look for information if not to the countries of an equal degree of civilization that are much older than our own and have a much greater population in proportion to their area? Here in Europe are farm lands that have been in cultivation for a thousand years and are producing larger crops than our fertile virgin soils and no one ever thinks of these farms wear-out out. On the other hand, they become more valuable and more productive year by year. It is a notable fact that has been repeated over and over to the American farmer, that the average production per acre of the European countries, particularly England, France and Germany, is over twice the average production of the same crops in the United States. Wherein lies the difference? It is not because European lands are naturally more fertile than American, but because they are farmed more intensively. The land is better prepared for the seed, plowed deeper, worked more before seeding, and as far as possible the lands that are to be planted in the spring are plowed in the fall and allowed to weather during the winter, a system that deserves to be greatly extended on American farms, especially in our corn-lands."

IMPORTED FORAGE-PLANT SEEDS

The Secretary of Agriculture is calling attention to the Seed Laboratory which has examined a considerable number of lots of forage-plant seeds imported into the United States during 1911 and found that many of them consisted of seed of low vitality and high weed-seed content, said:

"The analyses of 18 lots of seed of alsike clover, red clover, white clover, and hairy vetch, amounting to 225,780 pounds, showed that the pure seed consisted of only 44.9, 64.2, 51.2, and 23 per cent, respectively, of the consignment, while the germination was as follows: 38.8, 37., 30.5, and 77 per cent, respectively. Consequently, tho this seed was imported at a cost of $7.47, $7.97, $17, and $3.82 per 100 pounds, respectively, the actual cost of 100 pounds of seed that germinated was $44.35 for alsike clover, $34.66 for red clover, $111.86 for white clover, and $23. clover, $111.86 for white clover, and $23.29 for hairy vetch, or from two to four

times the market price of seed of the very best quality.

"A special examination of seed of alsike clover and red clover imported from Canada during 1911 showed that approximately one-half was unsalable for seeding purposes in that country, the seed-control act there prohibiting sale when more than a prescribed number of noxious seeds are found to the pound. One lot of seed of alsike contained less than 50 per cent of pure seed, germinating only 15 per cent, or seven and one-half per cent of the entire bulk. This particular lot contained approximately 135,000 weed seeds in each pound."

THE 1911 YEARBOOK

The eighteenth volume of the Yearbook (1911) has just been issued by the United States Department of Agriculture. In appearance and make-up it differs but little from its predecessors. It contains thirty-one articles, sixty-seven full-page illustrations, of which nine are colored, and twenty text figures.

The Department's appreciation of the service Seaman Asahel Knapp rendered to agriculture during his long career is indicated in the selection of his portrait as a frontispiece, and in printing his biography as the first article in the volume.

The fifteenth annual report of the Secretary for the fiscal year ended June 30, 1911, occupies the first 142 pages and gives a "general report of the operations of the Department," which under the law must form a part of the volume. This report supplemented by the statistical matter found in an appendix of 200 pages gives a more complete and comprehensive summary of agricultural conditions in the United States than can be found in any other single publication.

The 354 pages comprising the body of of the volume contain the thirty articles contributed by the members of the scientific force of the Department, and present data upon many of the important questions now occupying the attention of agriculturists, topics equally vital to the agricultural and urban population, both as producers and consumers of the foodstuffs of the nation.

The importance of the forests to the agricultural welfare of the country and the prominence of forestry in the Department's work are reflected in two papers, entitled "Tree planting by farmers," and "The business aspect of national forest timber sales."

Closely connected with this work and especially interesting to the residents of many parts of the West is the cultivating of the arid and semi-arid soils of that region; hence the papers relating to dry farming and irrigation, entitled "Some misconceptions concerning dry farming," "The water economy of dry land crops," "Possibilities and need of supplemental irrigation in the humid region," "The value of snow surveys as related to irrigation in the humid region," "The value of snow surveys as related to irrigation projects," and "The present outlook for irrigation farming," will prove of value to farmers and other dwellers in that section of the country.

The two papers on the "Primary principles in the prevention and treatment of disease in poultry," and "The handling and marketing of eggs," together with the articles on "The reduction of waste in marketing," and the "Commercial methods of canning meats," will prove of interest not only to the general public but to those whose occupations are more directly connected with some phase of that work. The deservedly large place which the general farmer, the fruit grower, the trucker, and the grower of special crops hold in the thought and activities of the Department is demonstrated by the articles on the "Promising new fruits," "Seasonal distribution of labor on the farm," "Some results of the farmers' cooperative demonstration work," "Rotations in the corn belt," "Cotton improvement on a community basis," "The Weather Bureau and the cranberry industry," "Plant introduction by the plant breeders," "Relation between rotation systems and insect injury in the South," and "The value of predacious beetles in destroying insect pests."

"Decomposition and its microscopical detection in some food products," "Green vegetables and their use in the diet," and "A new respiration calorimeter for use in the study of problems of vegetable physiology," will appeal very strongly to the student of methods of improving the food consumed by the people.

Other papers of current interest submitted by different bureaus, entitled "Our mid-Pacific bird reservation," "Bird enemies of the codling moth," "Crawfish as crop destroyers," "Fibers used for binder twine," "Important American soils," the "Subsoil waters of central United States,"

and "The winds of the United States and their economic uses," complete the Department's current contribution in the new Yearbook.

The larger part of the edition of this volume is reserved by Congress for distribution by Senators, Representatives, Delegates in Congress, and Resident Commissioners, and the Department's limited quota is reserved principally for its voluntary correspondents for whom its entire supply is insufficient to furnish one copy to each.

RURAL CARRIERS AS FIRE FIGHTERS

Realizing that the season of forest fires is almost at hand and with the view of assisting the Forest Service in keeping the damage from them down to a minimum, the Postmaster General has issued an order which places at the disposal of the Forest Service a force of 55,000 men—the rural letter carriers, and the star route carriers. These men are directed to cooperate with the forest rangers and state fire wardens whenever and wherever possible. They have been directed on observing a fire or indications of possible fire, to notify the nearest forest official or fire warden. If it is impossible for the carrier to do this in person he must obtain the services of some reputable citizen who will transmit the message by telephone, if possible. Postmasters in or near national forests are also instructed to report any fires that they observe to the nearest forest official.

Last year forest fires destroyed in the neighborhood of $55,000,000 worth of property and the Department of Agriculture has, in consequence, been anxious to increase in every way the efficiency of its preventive service to reduce the damage to a minimum.

A couple of years ago a rural carrier in a western state was caught in a prairie fire and only saved himself and his mail by driving into a plowed field. Under the new order of the Postmaster General should there be a like occurrence the carrier is permitted to deviate from his route for the purpose of summoning assistance in suppressing the blaze.

BEEF TRUST TO BE INVESTIGATED

Representative Charles G. Edwards of Georgia has introduced in the House a resolution demanding an immediate investigation of the "Beef Trust." The resolution directs the Attorney General to proceed immediately with "an honest and thoro investigation of the 'beef trust' in the United States with a view to discover if said trust is controlling the prices of meats." The resolution also directs the Attorney General to institute prosecution to dissolve the "beef trust" in the event such a combination is found to exist.

It is reported that the packers claim the present high price of meat is due to a scarcity of livestock and shortage of shipments from the West. In this connection the Bureau of Statistics of the Department of Commerce and Labor has issued a bulletin in which it is stated that the livestock receipts at the seven principal western markets in April, 1912, were greater than those of any April since 1907 and that the livestock received at these same markets during the four months ending with April were greater than during the same months of any year during the past decade. The excuse for the high price of meat does not seem valid in view of the Government's figures.

KEEPING THE BOYS AND GIRLS ON THE FARM

By W. C. PALMER

In Wright County, Iowa, the boys and girls above the fourth grade in 34 grade schools were asked what they intended to do. One hundred and fifty-seven of the 164 boys replied that they would have nothing to do with farming. One hundred and sixty-three of the 174 girls likewise voted against the farm. Three years later, during which time instruction had been given in agriculture and home economics, the same question was asked of the pupils in the same schools. This time 162 of the 174 boys answered that they intended to become farmers, and 161 of the 178 girls were planning on remaining on the farm.

This is the best solution that has been given for keeping the boys and girls on the farm, and it works.

IMPORTANT PURE FOOD RULING

Hereafter when you buy a can of corn or peas or tomatoes you will get what the label calls for and not a whole lot of water. The Pure Food Board has declared that the can should be as full of food as practicable for packing and processing without injuring the quality or appearance of the contents. Some food products may be canned without the addition of any other substances whatsoever—for example tomatoes. If water is added the product will be considered as being adulterated. Under the ruling canned foods will be deemed to be adulterated if they are found to contain water, brine, sirup, sauce or similar substances in excess of the amount necessary for their proper preparation and sterilization.

The board has also decided that apple pulp may not be added to canned tomatoes and that the addition of tomato juice in excess of the amount present in the tomatoes used is adulteration—that is, if in the canning of a lot of tomatoes more juice be added than is present in that lot, the same will be considered an adulteration.

ALFALFA IN THE EAST

The Connecticut State Station has contributed a report showing that a sufficient number of successes on a considerable scale have now been attained to prove that under proper condition alfalfa can be successfully grown in that state.

A measured acre from an 80-acre field yielded 5,542 pounds at the first cutting, 1,663 pounds at the second, and 2,420 pounds at the third. Analysis indicated that the first cutting, which was more mature, contained a lower percentage of protein, and a higher percentage of fiber in the water-free substance than the later cuttings.

On November 5, 1911, after abundant rain falls, alfalfa soil and potato soil had 20.49 and 18.06 per cent of moisture in the surface 6 inches and 18.72 and 15.94 per cent, respectively in the next 6 inches of soil. While the percentage of nitrogen in the surface soil was comparatively the same, the alfalfa land had a somewhat higher percentage of nitrogen in the subsoil.

THE OLDEST FARMING COMMUNITY IN THE UNITED STATES

Amos Reem Kanaga

The valley surrounding this town is known as Gorgonia Pass and is one of the two oldest settled districts in the United States, and farming was carried on here by the Spanish in 1701, and hundreds of acres were then growing grapes and various kinds of fruits. It is one of the richest districts in the state and I think is by far the most beautiful valley in Southern California. It has an elevation of 2600 feet and its annual rainfall is more than 18 inches. St. Augustine, Florida is its only competitor in age and it is destined to surpass it in the future drama of development a dozen times over.

In 1859 Jefferson Davis of war fame urged the building of a railroad thru this district. Even Winfield Scott spent days and weeks writing about it from the standpoint of its use for war purposes.

An outpost of the San Gabriel Mission was built here in 1830, and Piolico the last Mexican Government was here for months at a time, the guest of the early Spanish Donz, whose farms covered the whole valley. To pay a debt of gratitude Governor Pico gave the whole country of 40,000 acres to Powel Weaver, a scout, trapper and Indian fighter and a companion of Daniel Boone in Kentucky.

Kit Carson was here with a head of 200 cattle in the early sixties and history records the fact of his fattening his cattle on these plains before he drove to market. Old Chief Fig Tree John, killed more than a dozen of our gold seekers in 1850 and they are buried where they fell, the last five sleep just south of this town.

John C. Fremont was here in 1847 and says in one of his memoirs that he had butter, eggs, milk, cream, fruit and every modern delicacy, and it was here that he met Capt. Cook and his 500 Mormon soldiers that came from Iowa to help put down the scrap with Mexico.

Don Anza spent many months here in 1777, and made such a glowing report of his travels to Mexico that Spain appointed him Governor, of what is now New Mexico, and it was Anza's relations that later on helped our government in the controversy that gave us all of this country that once belonged to Mexico and Spain.

But I have forgotten to mention Beaumont, a town of 1500 people, with wide streets, lined with trees, and the trade center for the valley. The high development of this wonderful country has not reached here yet, but is now coming, for it is the last run of the cheap lands in this country of sunshine. They have a bank, store and Board of Trade and many other up-to-date accessories.

The country is fitted to grow delicious fruits, walnuts and almonds, the soil is so productive and rich that I do not wonder at the rank it held in early days. It is older than the oldest settled places in New Mexico, for Father Kino, the first Spanish Father, was here before he visited the Aztec people in New Mexico and Kino says that in 1701, this country was then in a high state of cultivation. It is hoary with age, for it was farmed one hundred years before Daniel Boone roamed over Ohio and Kentucky and when Indiana was a dense forest.

Major Bennett, an army officer, was here in 1863 and in his report to our government spoke of it bearing many ruins of old cathedrals and Spanish haciendas. In 1859, one Dr. Edgar, bought the whole country and then retired from the army and made it his home for many years. I found several families from Chicago residing in the foot hills, near town, among them is a banker and attorney, the last named is building a $50,000 residence.

Gen. Joe Lane was here in November and December 1848 and would have remained here for the rest of his life as he said in his letters but he was ordered to Oregon where he made his name immortal and is the greatest man in their state's history.

Only a few ruins are now to be seen and they consist of adobe walls. This valley was farmed long before the Pilgrim Fathers tried to raise potatoes and corn in Massachusetts, and the plains yielded big crops when its only rival was St. Augustine, Florida, where they raised no crops but put in their spare time rounding up wild game and hauling out St. John's fish.

Some day our government will put a monument here to mark the place that is now coming into prominence and where is located the oldest farming community on the American Continent.

In 1898 Dean W. A. Henry of the Wisconsin college of agriculture, published his first edition of "Feeds and Feeding." In 1910 the tenth edition, revised and entirely re-written, was issued. The twelfth edition of "Feeds and Feeding," 10,000 copies, has just come from the press.

DRIFTING OF SOIL

At this time of the year some soil will blow. The best immediate remedy is to spread thin layers of straw or manure in strips across the fields.

The permenent remedy is to grow a crop that puts grass roots into the soil. The best grasses for this are bromus inermus and western rye grass. These grasses have large root systems, thus binding the soil grains together a good deal as they were in the native sod.

Alfalfa is also good for putting roots into the soil. Alfalfa also adds fertility to the soil.

The longer the soil is tilled without putting organic matter into it the worse it will blow, and the less capacity it will have for holding moisture.

In 1899 151,321,000 acres of land were used for the production of our 5 leading crops—corn, wheat, potatoes, sweet potatoes, and rice, against 147,555,000 acres in 1909, a decrease of 2.5 per cent whereas the population of the country during the same period increased 21 per cent. This decrease in acreage was entirely in wheat, for which the area fell off 15.8 per cent while the yield increased 3.8 per cent.

PARCELS POST—THE COUNTRY MERCHANT

Congressman E. D. Stephens of Mississippi in a recent speech in Congress said: "The opposition to parcel post has grown very largely out of the fact that it is feared that the inauguration of this system will destroy the small merchant and give the

trade of the country to the mail order houses. Nearly every country in the world has a system of parcel post, yet the United States is the only country that has mail order houses to any extent. The mail order house is not the outgrowth of parcel post. In a compilation of the reports of the diplomatic representatives of the United States in countries operating a parcel or package post in nearly every instance it was stated that the parcels post has not injured the local merchant; on the contrary they could not well do without it; they find it a quick and economical way to get their goods; and a loss by direct orders to stores in the larger cities is comparatively small. If parcel post is not an injury to the local merchant in other countries it would not seem that it would prove to be an injury in our country. People naturally prefer to trade with one whom they know and because they have an opportunity to examine the merchandise."

Hon. John L. Burnett of Alabama one of the hardest workers in the House and an earnest advocate of parcel post tho he owns an interest in several local stores, says: "In my opinion the parcel post will force the express companies to reduce their exorbitant rates and in that way benefit both the merchant and his customer."

Hon. John H. Small of North Carolina says, "I have no fear that an enlarged parcel post will injure the retail merchant or retard community growth and progress. I stand upon the broad proposition that increased facilities of transportation have always made and will always make for progress. These increased facilities will promote particularly the best interests of the men on the farm. Isolation is said to be a mother of stagnation. There is no more effectual preventive of isolation than increased facilities of communication and transportation."

Hon. Thos. L. Reilley of Connecticut says: "I believe a real parcel post will, instead of being a detriment to the small store keepers and retailers generally, be helpful to them in stimulating trade. It is a measure calculated to be the greatest good to the greatest number and I believe for the good of all."

INSPECTION OF FIELDS FOR QUACK-GRASS OR GRAIN FIELDS FOR PURITY AS TO KIND

Upon application of a number of growers, near any railroad station, I will, so far as possible, send a competent field crop inspector to examine any crop with regard to its purity—freedom from other kinds of grain. diseases, weeds, etc.

This work is done when the grain is headed out. It is now time for inspection of Brome-grass fields to determine the presence or absence of Quack-grass. Write to this office. State your railway station, rural mail box number, or phone number; distance from station; number of acres you wish inspected; number of farmers or other persons co-operating in the work. State whether you are willing to meet the inspector and drive him to the fields and bear his expenses while there. Probably your local seedsmen will be especially interested in this work. We bear all other expense. If you wish other kinds of pedigree grain fields inspected later, tell us the number of acres and what breed of flax, wheat, oats or other grain you are trying to raise. Notify us about the time the grain is beginning to head.

If you will harvest such seed properly and keep the seed from getting wet after it is harvested, we will be glad to certify as to quality and purity. This will help you to sell large quantites of pure bred seed. We keep a list of all such growers and furnish it to persons who wish to buy seed.

Address H. L. Bolley, Botanist & State Seed Commissioner, Agricultural College, N. D.

If you wish Brome-grass fields inspected Notify Us At Once.

COOPERATION

The principal line of work of the office of Corn Investigations of the United States Department of Agriculture, is helping farmers to grow more profitable corn crops. We are not nearly as capable of helping them as we should be. A general opinion prevails that everybody knows how to grow corn, but the truth is that no one knows enough about the fundamental requirements of the crop to bring about its possibilities. We should look into the future, and during prosperity press a campaign of investigation to determine the optimum conditions for corn—our most valuable crop.

We should systematically investigate:

1st. Which varieties of corn can be most profitably grown in the different localities.

2nd. The best order of combining the effects of cross-breeding, adaptation and selection in improving and originating better corns.

3rd. What two varieties when cross-bred will produce a strain better suited to the local conditions than either parent.

In the 1903 Yearbook of the U. S. Department of Agriculture, we find this statement: "It is possible within a few years to double the average production of corn per acre in the United States and to accomplish it without any increase in work or expense." Since 1903, I have seen abundant proof of this statement. The average acre yield has not been doubled because the effort has consisted mostly in telling farmers things they already know, or things nobody knows, instead of ascertaining by systematic investigation of fundamental requirements of the crop and the practical means of locally supplying such requirements.

You will agree that the careless farmers' acre production can be doubled, but perhaps you are not willing to agree that the careful farmers' acre production can be improved. But it can, and this we have demonstrated, during the past ten years. The Ohio Farmer, of December 2, 1911, contains a statement from some of the best corn growers of your state, that seed selection has increased by ten bushels his yearly average acre yield.

During the past ten years we have helped farmers in different localities to obtain yearly averages of ten or twenty bushels more corn per acre and more than double their profit on the corn crop. Greater increases than these can be accomplished in many thousand localities. Why then does not the government accomplish this in many thousand localities? Because it is not fair for the Government

to help those who will not help themselves.

It is because active corn improvement associations, corn breeders' associations, and boys' corn clubs exhibit the proper determination, and furnish the best opportunity to benefit large numbers that they receive first assistance from the Government.

There should be boys' corn clubs in every community. Not that the work is "child's play," but that by starting early we may awaken and maintain interest in the crop, gain years of experience and make play of our most important task. To determine the most profitable corn for a community is more difficult than to construct a railroad. The influence of various and variable factors is less certain and less understood.

If there is anyone who thinks variety testing a low grade of investigation, let him attempt to prove beyond doubt which is the most profitable corn for his community. If he is but partially successful, his results are worth thousands of dollars yearly to the community.

But when will this important corn improvement work be finished? Never. How is it pursued? By determining the most productive strains for each locality and then making them still more productive or originating strains that are still more productive.

Such work necessitates field experimentation and why should farmers be expected to help? Because the field work must be conducted in each community, and it is impossible to help the farmer unless he takes an active interest in helping himself. It is by the active cooperation of corn improvement associations, and other farmers' organizations, that the work of the State Experiment Stations, and of the United States Department of Agriculture produces best results. This is why we are glad to help you. Each year's results and experiences will enable those of succeeding years to be made more and more profitable. Organizations, such as yours, embody experience, maturity of judgment, and perpetuity—exactly the qualities the important task requires. —Extract from Speech of Corn Expert at Hamilton, Ohio.

TOO MANY LAWYERS AND DOCTORS; NOT ENOUGH EDUCATED FARMERS

The Secretary of Agirculture has this to say: "The Department of Agriculture is organizing just now to take farm demonstration work into the Northern States. Two classes of men are required for this work; First, in each county a first rate farmer who has been a success on his farm and who understands practically, without much theory except what he may have incidentally picked up, how to handle the soil, the plant, and the animal; Second, over large districts and states a different class of men is wanted, who have an agricultural college training combined with its application to practice in the field. As we read the daily papers and see the reports of the thousands of young men who are graduated in law thruout the country, the reflection naturally comes, what a pity that the great demand of the farm for intelligent men is not being more considered by our educational institutions. There is not law work for more than a small per cent of these young men. No doubt the education and mental training they have had will make them brighter men, but there are no jobs waiting for them, that is for more than a very small percentage of them, while the fields are crying aloud for trained men. Housekeepers are complaining of the cost of living. It would seem to be wise for our educators in their national meetings to consider these problems. It might be wise to consider about how many young lawyers will be needed in the next year to take the place of the older men who are dropping out. That could be very easily determined. Then if the attention of this class of students were called to the demand of the industries for educated men, a different direction might be given to many young men who seem to be 'drawing their bows at a venture.'

"This applies to more than the lawyer. There are no doubt far more young physicians being turned out from the educational institutions of the country than there are patients for. Wrong direction has been given to the education of many young men, and yet there is nothing more difficult to change than the old systems of education.

"In his sixth annual report (1911) as President of the Carnegie Foundation for the Advancement of Teaching, Dr. Henry S. Pritchett says:

'According to the census tables there were in the United States in 1900, 132,000 physicians and surgeons. In the bulletin on medical education issued by the Foundation in 1910, it was calculated after careful investigation that 2,000 graduated annually from the medical schools would furnish an ample supply of new physicians to take the places left vacant by death and other causes, and to keep pace with the growth of population. Assuming, and it is evidently an extravagant assumption, that the proportion of lawyers to the population should be as large as the proportion of physicians, 1,700 graduates annually from the law schools would be sufficient to maintain even the present crowded stage of the legal profession. As a matter of fact, in June, 1910, the number of students graduated by the law schools numbered 4,183; and this takes no account of the large percentage of lawyers who are admitted to the bar without having received a law school diploma. If we place the per capita need of a laywer at the same figure as the need of a physician, and disregard all who enter the profession without completing successfully a law school course, it is evident that the output of the law schools of the present day is far in excess of any necessary demand.'

"It is certain that the demand for lawyers and physicians is much more than met by the professional schools today. It is equally certain that the demand for educated farmers is strikingly neglected."

Cooking is one of the subjects taught Alaskan natives in the Government schools administered by the United States Bureau of Education. Among the dishes to which the pupils are introduced is doughnuts, which they are taught to fry with seal oil as a substitute for lard.

The high school at Manatee, Fla., needed an industrial building, and as no funds were available for the purpose, the school children built it themselves. It is a one-story structure, built of concrete blocks, 25 feet by 50 feet. The blocks were made by the grammar-school pupils; the high-school boys put up the walls and roof, and the girls nailed on the laths for the plastering. The school is called the Kendall Industrial Institute, in honor of the high-school principal, who designed and supervised the work.

Seeds, Trees and Gardens

PRUNING TREES

According to Professor Bailey the objects to be sought in pruning are: (1) to modify the vigor of the plant; (2) to produce larger and better fruits; (3) to keep the plant within manageable shape and limits; (4) to regulate the quantity of fruit borne by the plant, (5) to remove injured limbs or superfluous parts; (6) to facilitate spraying and harvesting; (7) to facilitate cultivation; (8) to make the plant assume some desired form.

A great deal of injury is often done to trees by careless pruning and improper treatment of the resulting wounds. When the limb is to be removed entirely, it should be sawed or cut off close to the body of the tree so that no projectlng stub will be left to prevent the proper healing of the wound. When the stum is left, it causes the bark to die around it, and in course of time when the stub rots out a vacity will be left in the tree in which insects or plant growths will lodge and eventually injure the tree. When decayed places are found in trees, it is best when possible to clean such places thoroly and then fill them up with Portland cement.

After carefully smoothing off the surface of a wound left by removing a large limb it is sometimes advisable to apply a dressing of pine tar, grafting wax, or lead paint. Where only a portion of a limb or branch is to be removed, it should be cut off just above a bud or node. In each case care must be taken not to cut too close to the bud or too far above the bud.

Perhaps the least injurious method of pruning, so far as the plant is concerned, is the prevention of the formation of new branches or shoots by pinching or rubbing off the buds which would form such growth off the buds which would form such growths. If the terminal bud is removed, more growth will be made in the lateral branches and the plant will become bushy. Trimming or pinching off the lateral buds will throw the growth into the terminal bud making the central stem elongate more rapidly.

Another method of pruning is what is known as root pruning. This tends to check the production of wood, and when carried out properly may increase the fruitfulness of the tree. In healthy plants there is usually an even balance between leaf surface and root surface. Root pruning is done by cutting in a circle around the tree in line with the outer tips of the branches, but this will vary with the particular plant under treatment and the nature of the season when the pruning is attempted.

In pruning the limbs of shade or ornamental trees it is always best to avoid stilted and unnatural effects in the shapes that are designed. Evergreen trees look much prettier when left untrimmed.

When branches are partly broken by storms or accident, they should be removed at once. Dead or diseased branches, should also be promptly cut off as soon as discovered, regardless of the season. General pruning should be done while the trees are in the dormant state, either in the fall or spring.

If the pruning is done in the spring, the wound heals readily, but there is a waste of the plant's energy in the loss of the accumulated food supply by the removal of the terminal portions of the branches. Spring pruning lessens wood production and induces fruitage.

If the pruning is done in the fall, the wound does not heal readily and may become diseased, but on the other hand many immature branches that would be killed by hard freezing in the winter would be removed and the vigor of the plant improved thereby. Late fall or winter pruning always favors wood production.

In transplanting trees, whether in the fall or early spring, it is always best to prune them rather closely. A great many of the roots are injured and broken in digging up the tree, and pruning of the branches is absolutely necessary to equalize its leaf and root surface. It will also reduce the amount of surface exposed to the action of the wind so that the tree will not be blown down or moved out of place. —Practical Agriculture.

CULTIVATION FOR TREES

C. B. Waldron, Horticulturist, North Dakota Agricultural College

While small the trees may be cultivated the same as corn with an ordinary two-horse cultivator. Another excellent tool for this purpose is the acme harrow. This cuts about seven feet wide. It is a good weed destroyer and leaves the soil well pulverized and in good shape to retain the moisture. With it one can cultivate an acre of trees an hour.

Until the trees begin to shade the ground they should be cultivated frequently, about once in ten days or two weeks and especially after every rain. In ordinary seasons the cultivation should continue until late in the fall but in seasons of excessive rainfall the cultivation may stop late in the summer to give the wood a chance to ripen for winter.

In dry seasons cultivation is more imperative than in wet. As the trees become large enough to shade the ground, which they will do very quickly if well tended, less cultivation will be required and after four or five years they will need but little. In most cases it can be done away with entirely and a good mulch of old straw will meet all requirements.

SIMPLE EXPERIMENT WITH FERTILIZERS

)(G. I. OR SHADE & GARDEN

If you take a pot of pure seashore or building sand, wash it clean so that it is nothing but a mass of minute rock fragments, and then add a pinch of Chilean nitrate of soda, a natural nitrogen fertilizer, and a pinch of treated phosphate rock, which is a natural phosphorus fertilizer, and a pinch of German potash salt, which is a natural potash fertilizer, you will at once have a soil which will grow a plant to maturity. Omit the pinch of nitrogen and the plant will die; omit the pinch of phosphorus and it will die; omit the potash and it will likewise die. The

chemistry of soils then from the agricultural standpoint seems very simple and, practically, to the farmer, it is simple. Soil naturally rich contains large quantities of all three of these materials. But when it is cropped year after year and the crops which absorb large amounts of these fertilizers are shipped away, the soils obviously become poor in plant food. Artificial fertilization then becomes a necessity.

QUACK GRASS

The underground stems are the seat of the remarkable vitality of quack-grass; therefore, for a full understanding of this subject the plant in its relations to the underground stems will first be briefly considered. These stems are often called roots. They are not roots in the true sense of the word, but rootstocks, that is, underground stems. The distinction between rootstocks and roots is that rootstocks have buds on them as stems do, while roots do not. Another very important distinction is that rootstocks do not absorb material from the ground, while roots do. The rootstocks are dependent for their growth upon the material absorbed by the roots and elaborated in the leaves in combination with the material which the leaves draw from the air. This material elaborated in the leaves then goes down to form the underground stems, or rootstocks. The plant is simply storing up material to draw on next year.

As the material for the growth of rootstocks comes from the leaves, the amount of leaf growth which the plant produces in any one season is largely a measure of the amount of rootstock growth. So, by limiting the development of top in any way the number of underground stems produced is thereby limited. If little or no top is allowed to grow very little rootstock will be developed. Just as we would expect a small crop of potatoes if we were to keep the top of the potato plant cut back close to the earth, so should we expect a minimum of rootstock growth to be produced by the quack-grass plant if its top is kept closely cut. By actual observations this is found to be true.

There are three types of management of quack-grass land that bring about three widely different conditions in the vitality of the plant. The three resulting types of quack-grass land are given below.

The deepest and most vigorous rootstock development of quack-grass is found in cultivated fields. There are several factors which cause this. The principal one is probably deep preparation of the land. When the plant is left undisturbed the rootstocks have a tendency to get nearer the surface every year. Deep plowing puts the stem back to the bottom of the furrow, and a mass of tangled growth is then sent out toward the surface, a large part of the vitality of the buried stems going into new stems reaching toward the surface. This new growth lives until the next year. When the stems are buried deeply to begin with and cultivation is not kept up long enough to kill out the grass (and it usually is not on this type of land), the plant takes on a new lease of life after cultivation stops, the loose deep soil furnishing an ideal place in which to grow. As a consequence, the plant becomes firmly established and is well able to stand the next year's battle.

If the meadow has been down for several years, and especially if two cuttings of hay a year have been secured, the rootstock development is found to be about half the extent and depth of that found in cultivated land.

The smallest rootstock development is found in closely grazed pasture lands. Here the underground growth of quack-grass finally becomes a few mere shreds of rootstocks, and these are very near the surface.

In midsummer, immediately after haying, there is usually a period of more or less relexation from general farm work. This is a season of the year also when rootstock grasses seem to be at their lowest state of vitality. The hay crop too has been secured from the sod land and nothing more is to be produced the current sesaon on these lands; therefore, no crop is lost. If the work is begun on pasture lands, at least a half season of pasturage has been obtained. It is only on sod and pasture lands that it seems to be advisable to attempt to destroy quack-grass by the method here outlined, as was pointed out in the discussion of the root-stock habits of the grass under varying field conditions.

The process of killing quack-grass on sod or pasture lands, beginning in midsummer, is a very simple one.

The first step is to plow the sod, cutting just under the turf, which is usually about 3 inches deep. To thoroly turn over a stiff quack-grass sod as shallow as 3 inches it is advisable to use a special type of plow (Scotch bottom) having a very long, gradually sloping moldboard. It has been found that with this type of plow the sod can be turned very shallow. The next step is to go in a week or ten days later with a disk harrow and thoroly disk the sod. Repeat this treatment every ten days or two weeks until fall, when the quack-grass will be completely killed out.

It sometimes happens that with certain kinds of soil during drier periods in the summer the ground becomes too hard to plow. With the type of plow suggested, however, it has been found that very hard and dry sods can be turned. In case it is not possible to turn the sod on account of dry weather, the treatment can be given with the disk harrow alone. We have been able to thoroly kill the grass with either the disk or the combination of plow and disk treatment. Where plowing is possible, however, it is usually cheaper to kill the grass with plow and disk than with the disk alone.

If the disk alone is to be used, it should be set practically straight, well weighted with bags of dirt, and the field gone over three or four times. The first two cuttings should be at right angles and the other cuttings diagonally across. The sod in this way is divided into small blocks. Then the disk is set at an angle, when it will be found that the first 2 or 3 inches of the sod, which contain practically all of the quack-grass roots, can be cut loose from the soil below. The exposure to the sun and the breaking loose from the lower soil soon kill out the quack-grass. This ground should be gone over at intervals of ten days or two weeks thruout the remainder of the season.

The following spring the infested land, on which the grass has been killed either by the disking method or by the combination of plowing and disking, should be plowed to a good depth in order to bury the mass of dead roots thoroly. This will facilitate the cultivation of the spring crop. If the work has been carefully done the quack-grass will not show up at all in the spring crop.

PUSHING TREES

Trees are absent from the prairies because they could not compete with the grasses. These having their roots nearer the surface would have the first chance at the moisture. Trees will do well on the prairie if given full possession of the soil their roots occupy. The Forest Service has investigated the length of root growth. They find that the roots are from one to two times as long as the tree is high; in other words if the tree is 15 feet high the roots extend from 15 to 30 feet. This gives a guide for the width that needs to be cultivated or mulched in order to give the tree the best chance for rapid growth.

THE HEN'S TROUBLES

In a tumbled down box they set her
The old blue speckled hen,
On some very, very large eggs she thought
I think their number was ten.

For she had been clucking, clucking,
And the heart in her feathered breast,
Was longing to cuddle some downy chicks
So of course she "kept" her nest.

And she kept it for three long weary weeks
Nor did she suspect the cheat,
But the little ones didn't break the shell,
Nor was there a single peep.

Then another week passed by her
And grave and stern she grew
But at the end of the fourth long week,
O how the egg-shells flew!

But consternation seized her
And horror held her back,
These chicks uttered never a "peep"
But merely said, "quack, quack."

But mother-like she loved them
And tho they were not fair
She led them to the feeding ground
And hovered them with care.

She took them for a ramble
Then into the garden patch,
But try with all the might she had
They would not learn to scratch.

She took them to the pond with her
Yes, every son and daughter,
And off they paddled, while she "called,"
Right off into the water.

This poor old unsuspecting hen
Was right against her luck,
Each chick you see was not a chick
But just a dirty duck.

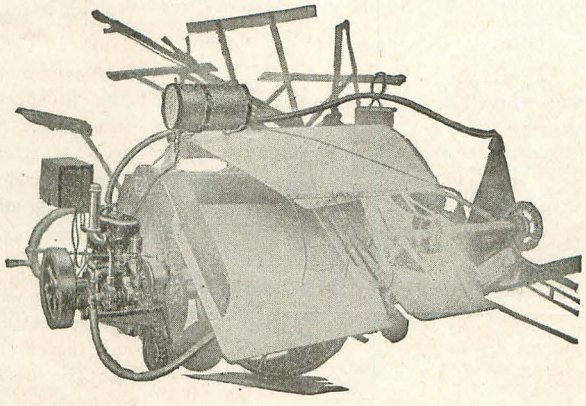
And soon she learned to know the cheat—
It made her very wise,
She never sat on eggs again
That were not the proper size.

—Alice Arndt, Courtenay, N. D.

Among Our Advertisers

FARM CUSHMAN ENGINE

Several carloads of the Farm Cushman Engine have been shipped into this state the past few weeks. The saving in grain and horse flesh by the use of a motor on the header or binder is beginning to be understood. The best of it is that after using the motor during the harvest the farmer may employ the same engine for pumping, grinding, churning and electric lighting. Thismotor may be attached to many of the standard makes of binders and headers. Our readers are strongly urged to make further inquiries regarding this remarkable machine by addressing the manufacturers at 2009 N. Street, Lincoln, Nebr.



Showing How Farm Cushman Engine is Attached

THE FARGO FOUNDRY

The attention of our readers is called to one of the most essential enterprises of the state. We never appreciate the value of a foundry until the break-down occurs. It is as important to have a repair made promptly as it is to have it done at all. In time of need just try the Fargo Foundry, whose address is simply Fargo, N. D.

HOW YOUR SHOES ARE MADE

Nothing is more interesting than following the process of a rubber boot from the crude rubber to the finished "Ball-Band," which keeps more than 16,000,000 feet warm, dry and comfortable.

The rubber "biscuits" are put thru crushing and grinding mills, thoroly washed and cleansed. It is in the form of big sheets at this stage.

After being thoroly dried, this rubber is taken to another department where the compound is made, which not only makes the rubber workable, but gives it additional toughness and resisting quality. It makes it possible for the footwear to be vulcanized.

Powerful machines press this compound of rubber into the meshes of cloth used in the linings, and thus strength is added to strength; the different parts are cut out and each boot or shoe is made by a skilled workman, who builds it entire on special aluminum lasts. After the shoes are made, they are put into a dry kiln, where they are vulcanized at a temperature of over 200 degrees. The next morning they are brought out and finished, thoroly inspected and then packed ready for the market.

PHYSICAL TRAINING FOR PUBLIC GRADE SCHOOLS

Graded gymnastic exercises and games for the schoolroom and playground; also playground construction and equipment. Compiled by the Physical Education Department of the State Normal School, Valley City, N. D., for use in the public grade schools.

T. W. BURCKHALTER, M.P.E., Director of Department of Physical Education, Valley City

Price, 50 Cents Postpaid

Address **W. G. CROCKER, Lisbon, N. D.**

For Sale

Fine Farm in the Best Watered Valley in Montana.

Forty acres under plow. A never-dry river runs across corner. County Road runs diagonally thru land. Irrigation ditch north of land, if you care to use it. Five miles to railroad. One of the finest apple orchards in world near mouth of valley. 400 acres plowed. Fine for grain, flax, etc. 225 acres grazing land. May divide if desirable.

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North Dakota Farmer

Entered as second class matter in the postoffice at Lisbon, North Dakota.

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PROF. C. B. WALDRON, Fruits, Forestry, and Insect pests.
GEO. HAUSMANN, Poultry.

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All Articles and Editorial Matter should be addressed to E. F. Ladd, Fargo, N. D.

Address all business correspondence to the Lisbon office.

Vol. 13 JUNE, 1912 No. 12

Keep a farm account.

Can it be possible that you are ever too busy to keep the machinery well oiled?

Cultivate, then cultivate some more. We have the moisture, now let us keep it.

The corn is a little backward, but the next sixty days will mean much. The soil never was in better condition.

The "yellow peril" is threatening the country, wild mustard. However, it is a friend compared to quack grass.

Our salvation: Less land better cultivated; the greatest returns the soil can produce; a fair return to the soil of the fertility borrowed.

No impatient, irritable man should have the care of sheep. They are as nervous as the highly bred Jersey and must be handled gently.

The poultry will welcome the advent of alfalfa on the farm. The leaves that shatter off are excellent poultry feed, and a farm without poultry is unworthy the name.

Why not place the lawn clippings or the plants hoed from the garden between the vegetable rows. It is far easier to smother the weeds than it is to keep them hoed out. Gasoline spray may be used effectually to clear paths of weeds.

At this writing the Northern Pacific Better Farming Special is making its way thruout the state. Thousands have already viewed the exhibits. Notwithstanding the limited quarters for exhibit purposes, the interest shown is evidence that great good will result.

One of the most effective machines on the farm is the farm paper. A subscriber writes us this month that the article on the care of wool, published last month, has been more helpful than a three years' residence in a sheep country. The N. D. F. is trying to do you good. A kind word spoken in its favor will be appreciated.

Never in the history of the state have the prospects been brighter. Rains in abundance have made the prairies look like a vast carpet of green, with here and there a welcome black section of black, indicating that King Corn is about to add his treasures to the wealth of this state.

At this writing it is quite evident that Roosevelt or another Progressive will be nominated at Chicago. Politics aside, the friends of pure food always had a staunch friend in President Roosevelt; in fact, the present National Pure Food Law may in large measure be credited to his persistency in having the bill brought before Congress.

The management of our state fair are to be congratulated for the emphasis being placed on the agricultural products of this commonwealth. Far too much stress has been given to fake features, until those farmers who attend must ever be on the alert for fear of being fleeced. Let every progressive farmer make it a point to exhibit his best products and thereby make the state fair the greatest farm products show of the Northwest.

Those who have been provident enough to put in a garden are now enjoying the fruits of their labors, or the wife's labors. There is not a farm in the state that cannot have delicious strawberries, currants, gooseberries, and vegetables of all kinds, by the exercise of a little effort and perseverance. Just note what you are missing, if you have no garden, and do the right thing next year.

Many cities are making strenuous efforts for a safe and sane Fourth. Let the good work extend into the rural districts. It is a striking fact that the loss of life has diminished in almost the exact proportion to the efforts that have been directed to this reform. The big cannon cracker is not more essential to patriotism than is a bombastic speech to statesmanship.

In the valley of the Nile, where the annual overflow of that river without fail leaves a rich deposit, there is no particular need of conserving the fertility. Since we cannot in this state depend upon such an annual supply of humus, a return must be made to the soil of the ingredients taken from the soil to mature the crop. Are we not like the youth sowing his wild oats? Little recks he of the terrible cost of extravagance, the sapping of his vitality. Some one will surely reap the whirlwind of our soil robbery.

Care should be taken in the curing of alfalfa. Alfalfa is best cured by the circulation of air rather than by the action of the sun. Hot sunlight and dampness have been known to reduce its feeding value one-third. The time for cutting is not determined by the bloom, as with other legumes, but by the examination of the root crowns. If on bending over the stalks there are discovered numbers of new shoots, it is time to cut and as rapidly as possible.

The profits from a field of alfalfa are certainly very attractive. To be sure one is inclined to look upon a load of alfalfa as a mass of "sticks," but we are willing to leave the matter of choice to the stock, which eat it with avidity and give further evidence of its feeding value by their development. The prairie is fast being broken up and provision must be made for the increasing amount of livestock. Begin this season, yes, right now to provide for a never-failing yield of one of the best fodders and soil rejuvenators.

Only a short time ago the farmer thought the auto one of the luxuries of the rich; now he would scarcely do without the

AUTO ON THE FARM

The auto on the farm arose
Before the dawn at four.
It milked the cows and washed the clothes
And finished every chore.

Then forth it went into the field
Just at the break of day,
It reaped and threshed the golden yield
And hauled it all away.

It plowed the field that afternoon
And when the job was thru
It hummed a pleasant little tune
And churned the butter, too.

And pumped the water for the stock
And ground a crib of corn
And hauled the baby round the block
To still its cries forlorn.

Thus ran the busy hours away
By many a labor blest,
And yet, when fell the twilight grey,
That auto had no rest.

For while the farmer, peaceful eyed,
Read by the Tungsten's glow,
The patient auto stood outside
And ran the dynamo. —Exchange.

Pure Food Advertisers

The products advertised below are in compliance with the pure food law of North Dakota and of the highest grade.
ASK YOUR GROCER FOR THEM.

Livestock Department

FARM AND STOCK NOTES

J. H. Shepperd

Milk that stands too long makes bitter butter.

A pure bred animal of any kind will degenerate very rapidly with careless treatment.

The manure hogs leave on the farm should pay for the labor of feeding.

Once in a full year should be considered often enough for a good milker to bring a calf.

In making any farm product profitable two things should be considered, cost of production and selling price.

A clean and healthy ration can be much lessened in value by feeding in a filthy trough or pen.

With a large class of farm products the difference in quality makes a paying compensation in favor of the best.

A cow should be milked carefully and as speedily as possible; it teaches her to give her milk down quickly.

Spasmodic work is worse on horses in summer than in winter altho it is bad enough at any time.

Judgment is the outgrowth of experience, yet a man may have a wide experience and be seriously lacking in judgment.

Upon the first six months of a colt's life depends to a greater or less extent the value and usefulness of the future horse.

To quite an extent the wealth of a country lies in the diversity of its production. Diversity of soils tends to diversity of production.

One argument in favor of a variety of food is in the fact that no two animals will give exactly the same results from the same rations.

If the sow does not attain a good growth before bringing her first litter, the chances are against her ever being the desirable size for proper strength and vigor.

Other things being equal, a nice even lot of wethers will thrive more satisfactorily and bring better returns for feed than fattening made up regardless of size uniformity and condition.

A small flock of sheep fits in nicely with the economy of the small farm not only furnishing its own quota of the income, but also doing much for the maintainance of the fertility.

The get of an aged boar is a better guarantee of the kind of stock he will produce than the judgement of any man as to the work a young and untried boar will do.

With many crops considerable loss often accrues from allowing them to become too ripe before harvesting. With grain crops it is usually best to harvest as soon as the seed begins to harden while crops grown for hay should be cut when the seed has formed well.

All the good qualities belonging to the race cannot be found in any single breed. A better feeding hog is sometimes secured by crossing pure bloods, but it should be remembered that the highest excellence is reached in the first cross for this. After that all is uncertainty.

EXPANDING INTEREST IN GALLOWAY CATTLE

(From 1911 Annual Report Secretary American Galloway Breeder's Association.)

Comparison

Our report shows an increase over last year in the number of pedigrees accepted for registry. (Only one other beef cattle record association showed an increase in registration for 1911.) This increase was recorded in the latter months of the year. Summer is usually the dull season for registration, but August this last year was our banner month. The significant feature of the summer's work was the registration of animals over one year old. Fully two-thirds of the animals recorded during the month of August were over one year old, and nearly three-fourths of the number were recorded under the ownership of men whose names are on our lists for the first time.

Registration

In connection with last year's report, I called attention to the fact that the decline in beef production in the United States in recent years has affected a decrease in the registration receipts of all beef cattle registry associations. This whole registration business hinges on a demand for pure-bred sires, and since the decline in beef production set in there has been a growing tendency among owners of pure-bred herds to abandon registration. In a great many instances only the animals that are sold for breeding purposes are being recorded. In 1910 we recorded a greater number of bulls over one year old than we recorded in 1909. This year the number of aged bulls recorded is 25 per cent greater than the number recorded in 1910. Nearly all of these bulls were sold before they were recorded, and the fact that most of them were sold to new men is significant of the growing popularity of the breed.

Transfers

The same significance can be attached to the transfer reports that are coming in. Very few, if any, large herds have changed ownership, but more breeders and more new men are represented in the lists of transfers received this year than are usually represented in a single year's receipts. There has been no favored district. These transfers came from all sections of the country.

Renewal of Interest

There are many other evidences of increasing interest in Galloway cattle. Never have we received so many requests for literature relative to our breed, and in no year since I became connected with this office have the members taken a greater interest in association affairs than during the year just closed. Significant also are the splendid exhibits of Galloway cattle seen at the state fairs and livestock shows held during the year. The breed was represented at nearly all the state fairs from Oregon to Virginia, and it is gratifying to learn that our exhibitors found ready sale for their surplus stock. At the Kansas City show alone more than forty head of bulls were sold at private treaty. Satisfactory prices were realized, and exhibitors were greatly encouraged by the unusually large number of inquiries received.

A NEW METHOD FOR DETERMINING FAT AND SALT IN BUTTER

Secretary Wilson of the Department of Agriculture calls attention to a new test for fat and salt in butter which is described in circular No. 202, Bureau of Animal Industry, just issued by the Department.

This test was invented by Roscoe H. Shaw, Chemist in the Dairy Division, and is especially designed for use in creameries. The circular explains the apparatus in detail and gives complete instructions for operating the test, placing in the hands of practical creamerymen a simple, rapid, and accurate method by which can be determined the percentage of fat and salt in butter, and which in connection with one of the reliable moisture tests already in use, makes possible the complete analysis of butter right before the churn.

The new test for fat will probably not require more than five dollars worth of apparatus beside that already on hand in most creameries. The same centrifuge is used as in the Babcock test and the same acid.

The special apparatus consists of a separatory funnel of glass with a capillary stem. The separatory funnel is essentially a cylinder holding about two and a half ounces constructed with a glass stopper at the top and a stop-cock in a capillary tube at the bottom. A special socket is necessary to hold the funnel while in the centrifuge.

The principal steps involved in the test are: The washing out of the salt from a weighed charge of the butter with hot water, the dissolving out of the curd with hot dilute sulphuric acid, the separation of the acid solution from the fat and the weighing of the fat. When the salt test is to be made the wash water is collected and the salt in it is determined by the usual chemical reaction.

The time consumed in making the fat test is not much if any more than is required to make a careful test for fat in cream by the Babcock method. A little more time is required if the percentage of salt is wanted.

The new test has been thoroly tried out in comparison with the official laboratory methods and is quite in accord with them in results.

TAX ON OLEOMARGARINE

Professor Ladd as food commissioner for North Dakota in the Special Food Bulletins has the following concerning the tax on oleomargarine:

Shall the tax be taken off from oleomargarine, and if so, why? The tax on uncolored oleomargarine is one-quarter cent per pound. Is that enough to prevent any man from purchasing oleomargarine, or, is the tax such as to be a burden? In fact, it can hardly pay the Internal Revenue Department for the enforcement of the Law and to see that the oleomargarine complies with the requirements of the National Statute. It is not because of this one-fourth cent per pound that they desire the tax removed. It is the ten cents per pound on colored oleomargarine that the large packers, producers of oleomargarine and others are anxious that the Government shall take off, and why?

It is said that only three per cent of their sales are with this colored oleomargarine. Why do they want this tax of ten cents per pound taken off from colored oleomargarine? Why should oleomargarine be colored at all? The color is added for the purpose of perpetrating a fraud, for making it resemble butter, for deceiving the consuming public, and above all the poor man. It is a fact that colored oleomargarine is now not infrequently sold for butter, when butter has been called for. They want the ten-cent tax taken off so

ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN.
Comparison of Receipts and Shipments of Livestock for May

Receipts

Railroads	Cattle	Calves	Hogs	Sheep	Horses	Total Cars
C. R. I & P.....	366	159	1415	167	.....	38
C. G. W.....	1031	652	5555	1093	.....	131
C. M. & St. P.....	3455	1426	15678	2537	39	380
M. & St. L.....	1260	781	10944	592	2	206
C., St. P., M. & O..	1977	1371	22047	1042	192	403
C. B. & Q.....	120	254	1360	141	.....	28
M. St. P. & S. S. M.	2492	2993	7746	1103	1	231
Gt. Nor.....	5164	4931	21331	1162	2	551
Nor. Pac.....	3364	1547	6186	2059	45	241
St. P. B. & T.....	.....	.....	.....	.....	.....	.....
Driven in.....	1452	135	1529	111	14	.....
Total.....	20681	14249	93791	10007	295	2209
Increase.....	632	165	6140	1074	.....	160
Decrease.....	.....	.....	.....	.....	347	.....
Jan. 1 to date.....	111488	50708	496648	121900	273	11785
Increase.....	.....	.....	70328	34149	744	1183
Decrease.....	1203	4118	.....	.....	.....	.....
Average Wts.....	801	139	217	82	.....	.....

Shipments

C. R. I. & P.....	664	66	.....	.....	.....	20
C. G. W.....	1507	119	206	323	.....	51
C. M. & St. P.....	3122	218	10012	529	38	205
M. & St. L.....	314	22	9666	.....	.....	11
C., St. P., M. & O..	3300	1376	.....	650	60	19–
C. B. & Q.....	1187	14	.....	908	7	51
M. St. P. & S. S. M.	856	35	.....	138	28	32
Gt. Nor.....	2164	72	.....	.....	36	–0
Nor. Pac.....	781	13	27	95	1–	29
St. P. B. & T.....	.....	.....	.....	.....	.....	.....
Driven Out.....	527	271	39	302	83	.....
Total.....	14422	2206	19950	2945	268	655
Increase.....	389	.....	.....	325	.....	.....
Decrease.....	.....	3488	6968	.....	391	178
Jan. 1 to date.....	67037	7247	118812	73930	2770	3646
Increase.....	.....	.....	.....	29260	716	.....
Decrease.....	5533	13135	1876	.....	.....	260

that they may be able to sell this oleomargarine in the place of butter, and in this way practically drive butter from the market, and sell oleomargarine at the price of butter.

Do not be deceived by the specious arguments that are being put forth. Let them sell oleomargarine uncolored, white, its flavor is the same, and let them call it then, if they choose, the poor man's product. But why color it in imitation of butter and then charge the price of butter for the product? The arguments are not sound. There is fraud enough as it is without helping to make conditions favorable to greater food frauds on the part of the big interests.

THE CARE OF SHEEP

When about two weeks old the lusty young lamb will be found nibbling forage at the feed trough beside its dam, and the shepherd should provide specially for its wants to early accustom it to take additional food. This is best accomplished by having an enclosure or room adjoining the ewe-pen, into which the lambs find their way, while the mothers are prevented from entering because of the limited size of the openings, called the "lamb-creep." In this space, accessible to the lambs only, should be placed a low, flat-bottomed trough, with an obstruction lengthwise across the top to prevent the lambs from jumping into it. In the trough should be sprinkled a little meal especially palatable to the lamb, such as ground oats, bran, corn meal or cracked corn, oil meal, soybean meal—one or all,—varying the mixture to suit the changing tastes of the young things. At first they will take but little, but soon will become regular attendants at the trough thru habit impelled by appetite. There should not be more feed in the trough at any time than will be quickly consumed, and any left over should be removed and the trough thoroly cleaned before the next allowance is given. All feed should be fresh and have no smell of the stable—that which is left over can be given to the pigs. Lambs will drink a good deal of water, and this should be supplied fresh and clean.

With the springing of the grass, ewes and lambs should be turned to pasture for a short time during the warm part of the day. It is best to accomplish the change gradually and while the grass is short. After a few hours spent in the sunshine, nibbling at the grass, the ewes and lambs should be returned to shelter, where a full feed awaits them. When the grass has become ample and nutritious, stable feeding may be dropped for ewes, or both ewes and lambs, according to the plan followed. With good pasture, breeding ewes need no grain. Indeed, we may look forward to the pasture season as marking the time to "draw the grain from their systems," as it is termed by feeders. In some instances pastures so stimulate the milk flow of ewes that the over-supply of rich milk causes digestive derangement and sudden death with young lambs. The shepherd should forestall such trouble by removing the ewes from the pasture after a few hours grazing each day, and by giving hay or other dry feeds, thereby reducing the milk flow.

ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN.

Comparison of the Origin and Disposition of Livestock for May

Origin of Livestock Received

States	Cattle	Calves	Hogs	Sheep	Horses	Total Cars
Minnesota	15946	11864	73752	6016	97	1701
Wisconsin	1273	1691	8152	1037	16	184
Iowa	52	7	.....	.....	.....	2
Far South	6	2	.....	.....	138	9
So. Dakota	348	137	3587	233	.....	61
No. Dakota	2532	548	8300	312	.....	21
Montana	524	.....	.....	2409	7	39
Far West	.....	.....	.....	.....	37	1
Manitoba & N. W. T.	.....	.....	.....	.....	.....	.....
Far East	.....	.....	.....	.....	.....	.....
Returned	.....	.....	.....	.....	.....	.....
Total	20681	14249	93791	10007	295	2209

Disposition of Livestock

So. St. Paul P'k'rs.	9666	10731	74052	7607	.....	.....
City & State Butch.	449	128	472	332	.....	24
Outside Packers	134	1094	19478	279	.....	92
Minnesota	3554	741	.....	581	157	123
Wisconsin	1881	64	.....	371	40	65
Iowa	2273	98	.....	.....	.....	61
Nebraska	608	.....	.....	.....	.....	13
Kansas & Missouri	97	.....	.....	.....	.....	2
So. Dakota	1743	1	.....	.....	38	43
No. Dakota	425	3	.....	.....	23	13
Montana & West.	73	3	.....	.....	10	4
Far South	457	.....	.....	.....	.....	9
Manitoba & N. W. T.	.....	.....	.....	.....	.....	.....
Mich. & E. Can.	233	1	.....	.....	.....	7
Chicago	1000	14	.....	1382	.....	52
Ills (ex. Chicago)	1495	59	.....	.....	.....	47
Eastern Points	.....	.....	.....	.....	.....	.....
Returned	.....	.....	.....	.....	.....	.....
Totals	14422	2206	19950	2945	268	655

It is usually best to feed the lambs concentrates in addition to what they get from dams and pasture. To this end, at some convenient point in the pasture let there be a "lamb-creep," and in a space accessible by way of the creep a trough for feeding grain. Whenever the lamb passes thru the creep it should find something in this trough tempting the appetite,—oats, bran, pea meal, and corn meal constituting the leading articles. Grain never gives such large returns as when fed to thrifty young animals, and the growing lamb is no exception.

Lambs of the mutton breeds, more or less helpless at birth, are lusty at four months of age, and will be found grazing regularly beside their dams in pasture when not at rest or eating grain beyond the lamb-creep. At this age, for their own good as well as that of the ewes, weaning time is at hand. If possible, advantage should be taken of a cool spell in summer to wean the lambs. Lambs weaned during excessively hot weather may receive a serious setback because of the heat and the fretting for their mothers. The lambs should be so far separated from their dams that neither can hear the bleating of the other. For a few days the ewes should be held on short pasture or kept on dry feed in the yard. The udders should be examined, and if necessary, as is often the case with the best mothers, they should be drained of milk a few times lest inflammation arise. The lambs should be put on the best pasture and given a liberal supply of grain in addition. New clover seeding is especially relished, while young second-crop clover is also satisfactory. An especially choice bite may always be provided for the lambs at this important time by a little forethought on the part of the stockman.

Wing writes: "As a rule it is not necessary to wean lambs before they go to market. If they are fed right they will, while sucking their mothers, reach a weight of 75 to 85 lbs., if of mutton breeds." Lambs which are to remain on the farm should be weaned at 10 to 12 weeks. By separating them from their dams before the advent of warm weather, and putting them on clean pasture free from contamination, they may escape stomach worms and other parasites.

Opinions as to the amount of water necessary for sheep vary more than with any other domestic animal. In countries with heavy dews and ample succulent feed in summer, and where root crops are largely used in winter, water may possibly be denied sheep, but under most conditions it is a necessity and should never be withheld. A sheep needs from 1 to 6 quarts of water daily, according to feed and weather. The best results are secured when they have free access to fresh, pure water. On the arid ranges of the Southwest when grazing on certain succulent plants, like singed cacti, sheep sometimes go 60 days without water.

Sheep require salt, and it should be supplied them at regular intervals. In winter it may be given in a trough used only for this purpose. In summer salt may be rendered doubly useful by scattering in on the sprouts growing about the stumps, on brush patches, or over noxious weeds. Some western sheep raisers never salt their sheep but allow them to eat alkali, which is safe for them when it contains 80 per cent of salt. It is believed that salted sheep are less liable to become locoed.

The demand for well-fattened lambs steadily increases, the tender, juicy, high-flavored meat finding favor among Americans. Not only do prices for fat lambs rule high as compared with mature sheep and farm animals generally, but there are other advantages in feeding off lambs before they reach maturity. A given weight of feed goes further with lambs than with mature sheep, the money invested is sooner turned, and there is less risk from death and accident. Thus everything tends toward marketing the lambs as rapidly as they can be disposed of to secure the highest prices. If they are not sufficiently fat in late summer or early fall to meet the reasonable demands of the market, it shows that there has been a lack of feed and care or that parasites have destroyed profits.

Fattening sheep should be protected from wet coats and feet at all times. Ideal quarters in the Northern states are a dry, littered yard, with a sunny exposure, provided with a well-bedded, comfortable shed opening to the east or south and extending along the windward side to break the cold winds and driving storms. In such quarters the air is bracing, the sunshine invigorating. Here the animals, covered with a heavy coat and filled with grain and roughage, are warm and comfortable, and comfort is essential to the highest gains. When succulent feeds such as beet pulp are fed, the quarters must be especially well drained and the shed well bedded. If confined in quarters sufficiently warm for dairy cows, sheep sweat badly in winter. Stone basements are unsatisfactory, and if used ample ventilation must be provided. Damp walls are a sure indication of lack of ventilation and impending trouble.

Grain and roughage should be fed separately, and there should be racks in the yards sufficiently large to hold roughage for several days. If sheep are fed in close quarters the hay should be supplied daily, since they dislike feed that has been "blown on," as shepherds say. Grain troughs should have a wide, flat bottom, forcing the sheep to consume the grain slowly. Fifteen inches of linear trough space should be provided for each animal. The sheep can be successfully fattened when the grain is supplied by a self-feeder, they make smaller and less economical gains than where the feed is given at each meal time.—From "Feeds and Feeding."

DAIRY PRODUCTS IMPROVED THRU CONTESTS

Exhibitions of dairy products for prizes, says a publication soon to be issued by the Department of Agriculture, have proved

to be of great value to dairymen wherever tried. That much interest is being manifested is shown by the large number of entries from many States at recent exhibitions. At the International Dairy Show at Milwaukee, there were entered 115 samples of milk and cream from all sections of the country.

In commenting upon the educational value of these exhibitions A. C. Baer of the Wisconsin Experiment Station says: "These contests have proved that milk and cream produced and handled under sanitary conditions and kept at a low temperature can be shipped thousands of miles and remain sweet for weeks. The contests have also helped to point out to dairymen the common defects in milk and cream, and have suggested remedies to overcome the difficulties.

"A friendly, neighborly milk and cream contest of this kind brings the milkmen and dairymen together with common interests, and the educational value resulting will be no small gain to a community. The experience of men who have conducted these milk and cream contests has demonstrated the fact that milk or cream can be scored with reasonable accuracy for flavor and odor, bacteria, chemical composition, and keeping quality."

Recently the Pennsylvania and California stations have conducted butter-scoring contests. The winner in the California contest scored 96 per cent and the lowest butter scored was 89 per cent. The winning butter was made as follows:

A fair grade of gathered cream testing 30 per cent was pasteurized at 180 degrees, cooled to 48 degrees, and 14 per cent of good commercial starter added. The cream was not ripened, as it contained .52 per cent acidity. It was held 2 hours at 48 degrees, and churned. Time of churning was 40 minutes, and the granules were the size of wheat. The buttermilk had a temperature of 53 degrees, and tested .02 per cent. The manner of washing was spraying at 50 degrees until the water ran clear from the churn, then adding as much water at 50 degrees as there was buttermilk. There was one working.

MACHINE VERSUS HAND MILKING

From experiments with milking machines conducted for nine years by the Agricultural Experiment Farm of New South Wales, it was found that the flow of milk is not appreciably decreased when machine milking is substituted for hand milking, except in isolated cases, and that the period of lactation is not shortened or subsequent periods of lactation adversely affected in any way. Cows that had been milked by machine continuously for 5 years apparently did not decrease in the annual yield of milk. The percentage of solids in the milk remained the same as with hand milking, and the cows were no more subject to udder troubles. Machine milking was much cheaper and cleaner when the machines were properly cared for and run by a capable operator.

RAPE FOR PORK PRODUCTION

The Ohio Experiment Station has found that rape is one of the very best forage crops for hogs if clover is not available. Six pigs, weighing about 45 pounds each at the beginning of a test recently held by the Station, were kept on slightly less than one quarter of an acre of rape for eleven weeks. During this time the pigs received 825 pounds of a mixture of 9 parts, by weight, of ground corn to 1 part tankage, and gained 369 pounds in weight. Another plot, more fertile than this one, yielded an even more luxuriant growth of rape, and showed a larger carrying capacity.

The rape from the better plot had a feeding value of over $48 per acre when the gains produced and concentrates consumed by pigs, some receiving corn alone and some receiving corn and tankage, on the rape and by similar pigs fed corn and tankage in dry lot were compared. In this calculation corn was valued at 56 cents per bushel and tankage (60 per cent crude protein) at $48 per ton.

Poultry Department

Geo. Hausmann, Hillsboro, N. D.

LATE HATCHED CHICKS

Geo. Haussman

There is a wide difference of opinion as to the proper time to hatch chicks for the best results. Breed of course will make a difference, as the large varieties take a longer period to reach maturity, but leaving out of the question the Asiatics, of which few are raised in this country, April is considered late by many, while others make it a general practice to wait until May and June or even July, to get out the greater part of their chicks then. The incubator has made it possible to raise early chicks in larger numbers than could be done before the advent of the machines. Then, of course, the desire of most all breeders of fowls to get winter eggs has been a strong factor to hatch early. I will, however, make the statement, that it is a granted fact only, that early hatched chicks are most profitable, and will do best, but that is a matter which is almost wholly one of handling, and is in the breeders own hands. When late hatched chicks can be made to thrive as well as early hatched ones, there is much in favor of keeping on hatching until you have a desired number, regardless of season. Looking at it from one point of view the majority of farmers would be better off not to hatch until June. The handler of fowls who cannot get winter eggs is not justified in hatching early chicks, for they will cost him again as much as late hatched ones would, before they bring him anything. I can see no reason for any one to hatch early chicks and then get no winter eggs, beginning to lay as a rule in March some time. A late hatched chick will do the same thing and a little more too, saving the person who hatched later a neat little feed bill. There are, of course, a few points against late hatched chicks. Should it get real cold early in the fall, they will be caught in it, at the time they set their mature coat. Another is when laying has been very heavy and the season very hot, the parent stock will not give as good eggs as in early spring. It is a question which each must decide, whether or not these objections are so great as to overbalance the real advantage of quicker growth, less cost to raise, etc. Such matters as lice, tramping by other chicks and heat may be overcome by proper handling. The one point that must be observed in late hatched chicks especially is to give them shade. Water carries its stress as well.

In writing on this subject, I do not want to be understood that I recommend late

hatce dchicks for the money really sits In the winter eggs, in raising chickens, in this part of the country. Still the person that gets no winter eggs, as said before, is just as well off, and better, to hatch his chicks in June and July as sooner.

600 HENS IN AN EGG-LAYING RACE NOW GOING ON IN CONNECTICUT

According to the current issue of "Farm and Fireside" a year-long egg-laying contest is now going forward at the Connecticut agricultural college at Storrs, Connecticut. Every breed and variety is represented. When the contest is over, five or six hundred birds with records will leave Storrs to be bred from. It is believed that the data produced by this contest may help raise the present average of seventy eggs per year per hen in this country somewhat nearer the coveted two hundred per year and thus affect favorably the cost of living.

This is the first egg-laying contest ever held in this country and is international in character, there being entries from many different countries.

The hens are housed in a new plant built by the college, consisting of fifty specially designed houses, two pens to a house. During the first nineteen weeks of the contest 17,780 eggs were laid. A part of the article follows:

"The nineteenth week of the egg-laying contest ended with the English pen of White Leghorns, leaders since the first, still in the lead with a total of 369 eggs, an average of nineteen and eight-nineteenths. They are improving their average and holding their lead well. The second pen is one of Rhode Island Reds belonging to E. S. Edgerton, West Willington, Connecticut, with a total of 315 eggs.

"As a breed, the White Leghorns are getting into the game again, and so are the Barred Rocks. Orpingtons and Rhode Island Reds are still a little ahead in proportion to the number of entries, but the other two breeds are coming along well.

"The surprise of the week was the sudden spurt of the Dark Cornish Indian Games with a total for the week of 30 out of a possible 35 eggs. These belong to John W. Ward, Jr., Pennington, New Jersey.

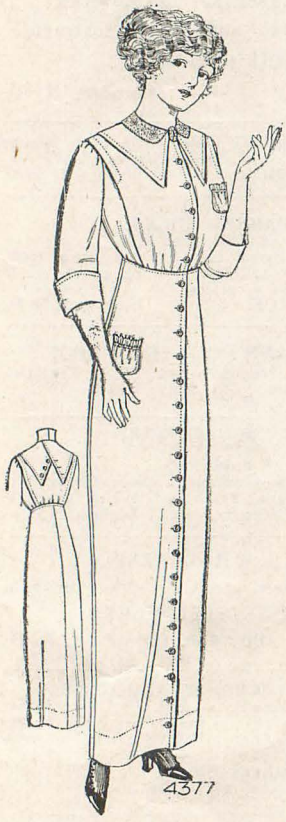
"Two thousand one nundred and forty-eight eggs were laid by the 490 birds for the week."

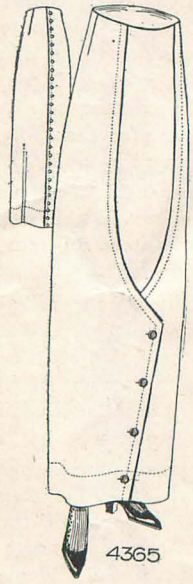
SOME VERY RECENT EXPERIMENTS IN POULTRY RATIONS

Tests were made a short time since in Germany to determine the effect of different meat meals on poultry. During these experiments it was found that the egg production ceased earlier than with normal hens. Fish meal was more favorable for egg production than meat meal. The eggs were of poorer flavor than normal eggs, but could be preserved in the usual way. The meat meal increased the intensity of the yellow color of the yolk. The flesh of birds fed meat meal was normal as regards taste and odor, tho slightly changed in color, melting point, and fat, which were higher than normal but lower than normal with fish meal. When fed cadaver meal the flesh of the fowl had a rancid taste, and whenever fed should be free from fat as possible. Tuberculous beef did not cause tuberculosis in the hens.

Six barred rock hens at the Ontario Agricultural College in twelve months laid 1301 eggs, the records of each hen being, 243, 252, 256, 268 and 282 eggs, respectively.

HOME DRESSMAKING





4365—Ladies' Two-Piece Skirt. Having an Inserted Section at Center-Front, High Waistline and in Regulation or Shorter Length. Closing in Back. Length in front from regular waistline 42, back 45 inches; perforated for 40 inches front, 43 inches back. Width around lower edge about 2 yards. Sizes 21, 22, 24, 26, 28, 30, 32 and 34 waist. Size 26 requires two and seven-eighths yards 44-inch material. Price, 15 cents.

4377—Ladies' Costume. Without Lining. Having One-Piece Sleeves with Turn-Back Cuffs. High Waistline and Attached Four-Piece Skirt in Regulation or Shorter Length. Length of skirt in front from regular waistline 42, back 45 inches. Width around lower edge about two and one-fourth yards. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires three and three-fourths yards 44-inch material. Price, 15 cents.

No. 3982—Ladies' Wrapper or Lounging Robe. Sizes 32, 36, 40 and 44 inches bust measure. Size 36 requires 8 yards 27 inch material or six and one-eighth yards 36-inch material; with one and one-fourth yard fancy material 27 inches wide to trim. Price, 15 cents.

No. 3443—Ladies' Lounging Robe. With body lining. Sizes 32, 36 and 40 inches bust measure. Size requires seven and three-fourths yards 32-inch material with nap or five and one-half yards 48-inch material without nap, one and three-eighths yard 36-inch lining and eight and one-half yards braid and 4 yards lace. Price, 15 cents.

Home Department

THE PRESSURE-TANK WATER SUPPLY SYSTEM

E. S. Keene, Dean Engineering Dept., N. D. Agri. College

An adequate and well-arranged water-supply system contributes to the comfort and well being of the family to a greater measure than any other form of household convenience. Such a system not only lightens the burden of household drudgery but adds immeasurably to the contentment of those who enjoy its service. When there is added to the convenience of such a plant that of a system of sewage disposal, the equipment of the suburbanor country residence becomes as complete as can be obtained where city water-supply and sewer service is available. That plants of this kind are in general use is a matter of common knowledge and that they are successful in service is attested by the number of companies engaged in their manufacture.

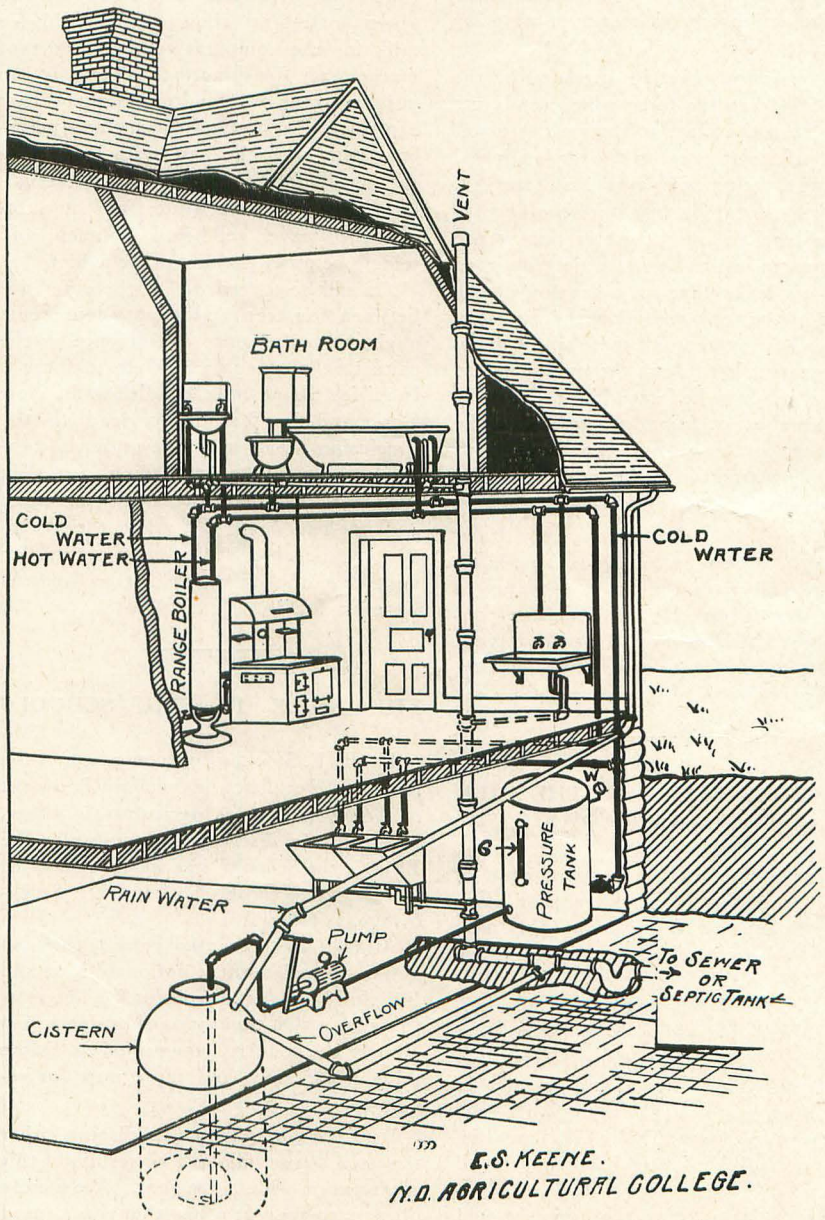
A water-supply plant for the average home need not be elaborate nor expense in order to be convenient and efficient. The water may be taken from any suitable source of supply and the plant may be made to suit the available conditions no matter what they may be.

The water-supply plant shown in the drawing is that known as the Pressure-tank system. It is simple in construction, not at all difficult to operate, and contains all of the essentials necessary to the demands of the average home. The picture includes the pipes and fixtures for stationary wash-tubs in the basement, for bath-room and kitchen sink, and also the waste pipes connecting with the house drain. These features are included to show the possibilities of a convenient and efficient system for the average isolated home.

The source of water supply in this case is a rain-water cistern sunk below the level of the basement floor, the top of which extends above the level of the floor. The water is pumped from the cistern by a common tank-pump and forced into the pressure-tank, as is clearly shown in the drawing: where it furnishes the supply of water as desired. The tank, in this case, is an upright cylinder made perfectly tight and constructed to withstand the necessary pressure required to perform its service. It may be galvanized as a precaution against rust, but this is not absolutely necessary.

The pipe which conveys the water from the pump, enters the tank near the bottom and as the water enters, the contained air is compressed into the decreasing space above its surface. The pressure developed by the compressed air furnishes the force by which the water is driven out of the tank and thru the distributing pipes as the supply is demanded. This is a principle of Physics known as Boyle's Law. If the air in the tank, when empty of water is compressed until it occupies one-half of its original volume, then the pressure will be twice the original pressure, which in this case will be about 15 pounds to the square inch. The higher the water rises in the tank, the greater will be the pressure developed. This may be as high as 125 pounds to the square inch, if occasion requires but 40 pounds pressure is generally sufficient for all the requirements usually demanded in a house plant. These pressures are easily attained with a force-pump such as is shown in the drawng.

A glass guage G. on the side of the tank, is intended to show the height of the water in the tank at any time, and the pressure guage W. shows the pressure sustained by the water. The supply pipe rising from the bottom of the tank branches to supply each of the fixtures, to which the water is conducted. In the drawing, the cold-water pipes may be traced from the supply pipe, where it emerges from the tank, to the kitchen sink, to the wash-trays in the basement, to



each of the fixtures in the bath-room and to the range boiler. The range boiler is connected with the heater in the kitchen range, which furnishes the supply of hot water to be stored in the range boiler. The hot-water pipes may be traced from the range boiler to each of the fixtures named above, where they terminate in each case, in a hot-water tap.

The size of the pressure tank is made to suit the requirements of the house and, if so desired, may be made to furnish water for purposes outside the house. The method of pumping may be by hand, as that shown in the figure, by gasoline engine, or by any other form of power. For the average size of dwelling, however, the hand pump is well adapted to the requirements. The limit to which such a plant may be extended will be determined by the size of the tank and the means employed for pumping. It may also be made to serve the purpose of lawn sprinkling and fire protection or as a means of watering stock.

In operation, the air pressure in the tank furnishes the force which sends the water thru the pipes to the various water taps. If for any reason the air is allowed to escape, the propelling force is destroyed. This may occur by reason of the absorption of the air by the water due to the pressure to which it is subjected or to small air leaks that may develop in the seams of the tank and allow the air to escape. To overcome these difficulties, arrangement is made in the pump so that air or water may be forced into the tank at any time as occasion requires. In the more elaborate plants the process of pumping water and the regulation of the air pressure are made entirely automatic.

Such a plant as that shown in the drawing is relatively inexpensive, simple to operate and gives the house a supply of water that furnishes every necessary convenience. Modifications to such a plant may be made to suit any condition or size, location or source of water supply.

NEW YORK CITY USES THE MILK FROM 150,000 COWS

In an article in the current issue of "Farm and Fireside," the author gives many interesting facts about the milk supply of great cities, especially New York. New York receives milk daily from localities as far away as four hundred miles. Following is an interesting extract:

"Recently I visited some friends in New York state, right in the milk-raising country, New York City uses an average, daily, of 2,069,200 quarts of milk.

"My up-state New York friends told me that many men in their immediate neighborhood were then getting fourteen cents per gallon for milk. It was midwinter, and the mid of one of the hardest winters in many years, too. I was surprised to know that they got so little for milk in such a season.

"'Oh,' they said, 'that's a pretty good price; in summer it'll get down to probably eleven for a long period.'

"'What does it sell for when it gets to New York?' I asked.

"'Most of the milk from around here brings nine cents a quart,' was the reply.

"That struck me hard. Two and three-fourths cents a quart to the farmer in summer, three and one-half cents a quart to him in winter; yet the New York milk trust gets nine cents a quart for it from the consumer!

"I had long known in a general way that the milk-growers around New York were outrageously victimized by the trust; but these figures made it worse than I had dreamed. For I happened to know something about prices paid for milk for the comparatively unimportant market of Washington. There is no milk trust at Washington; perhaps that explains. Anyhow, my Maryland neighbors who raise the best milk have been getting up to twenty-three cents the gallon for it this past winter, and in summer they never get below eighteen, and seldom below twenty cents the gallon.

"It will be conceded that the difference between fourteen and twenty-four cents ought to make quite a difference in the price to the consumer. Well, it doesn't. Inquiries about milk conditions in New York and in Washington lead to the conclusion that the New York consumer pays nine cents a quart for milk that the dairyman got not over three and one-half cents for; while the Washington consumer pays nine cents for milk that the dairyman got as high as six cents for."

THE BIBLE IN THE SCHOOLS

Dr. H. E. Stockbridge, now editor of the Southern Ruralist, and formerly President of the North Dakota Agricultural College, in an editorial discusses the question, "The Bible in the Schools" in a way that may be of interest to those who knew Dr. Stockbridge, as follows:

Atlanta has recently passed thru an active campaign of the national "Men and Religion Forward Movement." The motto under which thousands of business men all over the country have rallied is: "More religion for men, and more men for religion."

It is not our purpose to discuss either the need, cause, methods or results of this great nation-wide movement. We merely propose to present a few thoughts caused by a single statement made by one of the workers in the movement.

At a meeting of the Central Committee of one hundred, thru which the campaign in Atlanta was organized, the chairman of a sub-committee made this assertion:

"We propose to continue this effort till the Bible is restored to every public school in Georgia."

We wish to express a fervent **Amen** to this sentiment and give a few reasons for so doing.

We belong to that generation of Americans which began every school day with the reading of a verse of Holy Writ and followed, in every school, by repeating the Lord's Prayer.

It is a return to this simple devotion—this faith of the fathers—that we urge upon the thinking people of this Christian country. We are fully aware of the objections which will be made. They may all be met by a single fact. This is a Christian country and a majority of its people believe that the Bible is the Word of God. We can see no more valid objection to its use in public schools than to its universal use in courts of justice.

We are aware that the chief opponents of the use of the Bible in schools, in the past, came from people whose own particu-

lar and accepted part or version of the Scripture did not happen to be the one in official use.

There has been much progress made toward religious tolerance and unity—during the past quarter of a century. We would not favor compulsory reading of the New Testament by a Jew, nor of the King James version by a Roman Catholic. Both believe they possess the real Word of God. Let each use in school the version accepted and followed at home.

The objections of the agnostic, free-thinker, atheist and other non-believers, seem wholly illogical. The use of the Bible as a text-book, is not contemplated. School pupils are not to be taught from its pages at public expense.

The Bible is the foundation on which our whole social organization is built. It is the basis for our code of ethics and for the equity from which our whole system of jurisprudence is evolved. It stands for right as against wrong, for honesty and morality. We are told that these things should be taught at home. True. So should cleanliness and politeness, yet, experience has shown that the public school must be depended on to correct much home neglect of these simple essen tials.

Many of us have become carelessly accustomed to the conventional distinctions between good and bad, between right and wrong. We are aware of rules, laws and safeguards which society has established to define the relations between man and his fellowmen, but forget the sole foundation on which this whole structure rests.

Some years ago, an American was called upon by the government of Japan to organize a great national educational institution. In it young men were to be trained for the duties of citizenship in the new country emerging from its centuries of Oriental seclusion.

In the course of study prepared by the American, Ethics was included. The Japanese official in charge inquired the meaning or purpose of ethics. "It teaches the Eternal Right and Wrong, it defines the true relations between man and his fellowmen," was the reply. In this work Dr. Stockbridge had a part having spent several years as a professor in the University.

"Good," said the Japanese, "we need it."

"I must tell you, however," said the American, "that the Bible is our only foundation for such instruction."

"Impossible, you must find some other authority."

"Shall we depend on Buddha or Confucious?"

"No, they teach nothing you describe. Do you tell me that Western civilization has no other foundation for its distinctions between right and wrong, and the relations between men than the Bible?"

"Yes!"

So the Bible became a textbook in a government school which has helped make modern Japanese history. Must the heathen Japanese become our teachers in the use of the Bible?

Are we afraid—of what?

Surely not of God's Word—**The Book.** Let us pray—then put it back into every public school.

ELEMENTARY AGRICULTURE

McNeal C. James

SOILS

The most important thing the farmer deals with is the plant. Man's food is made up of plant or animal matter. The animal depends upon the plant for its food, however, so the plant feeds man dierctly or indirectly. The same thing can be said of mau's clothing, and to a large extent of his shelter.

A very noted man from Europe recently visited this country. After he had gone from one end to the other of America, he was asked by an American what thing had impressed him the most in this country. He replied that the large number of houses made from lumber had impressed him most. But not only do plants furnish material for shelter but they furnish most of our fuel. Besides, we use them for medicine, make farm implements from them and use them in many other ways. So we must consider the plant the most important thing the farmer deals with.

If this is true the soil is the next most important thing, for without it plants would not grow. For this reason we shall make a study of the soil, and shall study it in relation to plant growth.

The soil is made up of two different kinds of material; that which comes from the decay of rocks, inorganic matter, and that which is the result of partially decayed plant and animal matter. Besides these a

fertile soil contains soil air, water, and some very small plants called bacteria.

There are several different classifications of the soil, but one is very much more important than the others, so we shall only consider this one. This classification is based upon the size of the soil particles it contains. The size of the soil particles is very important because the kind and amount of crops which can be grown depends upon the amount of water and plant food which are available for the plant. These depend in turn upon the size of the soil particles.

A sandy soil is one made up very largely of coarse grains. It allows water to run thru and evaporate from it very readily. Air circulated thru it freely causes humus to decay too rapidly.

The soil with particles smaller than sand is loam. Besides being composed of small rock particles, loam contains a considerable amount of organic matter. This substance is partially decayed plant or animal matter. Organic matter gives a soil a dark color. Because loam is made up of smaller particles than sand, and because it contains organic matter, it holds water well. Air circulates thru it just enough to make it suitable for plant growth. For these as well as other reasons, a loam soil is usually a fertile soil, and is the most common, normal agricultural soil of all soils.

The soil with the finest soil particles is clay. It is so fine that there can be no grittiness felt when it is rubbed between the thumb and finger as there can be with the other soils. It has the feel of flour. Clay soils usually do not have enough organic matter in them. Because of this fact and because of the fact that the particles are so fine, clay tends to be a tight soil. That is, it is packed together too much for air and water to pass thru as rapidly as they should for good crop growth. While they do not give up water as does sand, yet they suffer when drouth comes because of the tendency to crack open when they get dry.

The main uses of the soil to the plant are:

1. To furnish mineral plant food.
2. To act as a reservoir for water.
3. To act as a home for the roots of the plant.

These functions can best be carried out when the soil is in a good physical condition. This condition is brought about by the alternate freezing and thawing of the ground in the winter time, and by other natural agencies. Man can help these out a great deal by cultivation and by proper cropping.

The main effects of cultivation are:

1. Loosens up the soil so that air and water can get into it.
2. Covers up straw and other organic matter so it will decay.
3. Saves moisture.

The roots of the plant needs air as well as the leaves, and if it is not supplied to them, most agricultural plants will not make a good growth.

The effects of cultivation upon moisture are very important. If one will touch a blotter to a drop of ink, the ink is quickly taken up into the blotter. When the end of the lamp wick is put into the kerosene of the lamp, the whole wick soon becomes wet. If the kerosene is then lighted it will burn until none is left in the lamp, altho only a part of the wick was in the oil. When two glass tubes with small holes are placed so that their lower ends touch water, the water will rise in the tubes and remain there when the tubes are removed from the water. These instances are all examples of what is called the power of capillarity.

Now when the surface of damp clothes or soil is exposed to the air and sun, it tends to give off moisture by evaporation. When the layer of soil on the surface becomes dry by the water passing off into the air, the layer of soil next to the surface pasess water up to the dryer layer above. As the water passes up it tends to form little paths. The closer the soil particles are together the faster the water passes up, Now when the surface of the soil is cultivated, these little paths are broken up for awhile, and the particles of the soil are loosened up. Water will not pass up thru this layer of loose soil as it did before so it is saved to the plant. This loose layer we call the dust mulch.

If the farmer wants the soil to give up its plant food to the growing plant he must keep the ground in the condition described above. All plant food the plant gets from the soil must first be dissolved before it can be taken up, so we must keep the soil in good shape by cultivation to bring this about. The amount of plant food in any given soil is usually somewhat limited. If the farmer is always taking out this plant food and hauling it off to town as he does when he sells wheat or oats, and does not put any back in the form of manure and other forms there comes a time when the amount of plant foods will be too small to give good crops. So the farmer must not only cultivate the soil well, but he should be careful with the plant food, by growing a rotation of crops, and by plowing under all straw and stubble and adding manure.

BOY SCOUTS IN ENGLAND

Boy scouts in England must dig a patch of the garden 12 square feet in size, know the names of a dozen plants in an ordinary garden, understand what is meant by pruning, grafting and manuring, must plant and grow successfully six kinds of vegetables or flowers from seeds or cuttings, and must cut and make a walking stick or cut grass with a scythe under supervision.

North Dakota Farmer: Fifty Cents a year; 3 yrs., $1.00. Agents wanted.

Seasonable Receipts

Baked Fish

Take any fish weighing over two pounds, wipe dry, salt and pepper inside and out, dip in beaten egg—then roll in crumbs, bake for an hour—basting often with butter.

Boiled Fish

Tie the fish loosely in cheese cloth so they won't fall apart, and boil for one-half to three-fourths hour in salt hot water to which has been added one-fourth cupful vinegar. Serve with melted butter or cream gravy poured over.

Egg Sauce for Baked Fish

One and one-half tablespoonfuls butter, one tablespoonful flour, one cupful milk, salt and pepper, three hard-boiled eggs. Melt butter, stir in flour until smooth. Add milk and seasoning and stir over fire until smooth and creamy. Chop whites of eggs and stir into sauce, then grate yolks over the top.

Baked Cup Custard

Six eggs, one-half cupful sugar, one quart new milk. Beat the eggs, add sugar and milk, and any flavoring. Fill the cups three-fourths full of custard and sprinkle with nutmeg. Set them in a moderate oven in a shallow pan half filled with boiling water. In about 20 minutes try them with a knife-blade to see if they are firm. Great care must be taken in baking custard for if left in the oven too long or if oven is too hot the milk will curdle.

What to do with Rhubarb

This plant contains just the acid that the system needs in spring and early summer and should be used freely. It can also be utilized in many ways to give variety to the winter store of canned fruits.

To Can

Some cool day when you are going to have a fire for several hours. Clean and cut up enough rhubarb to fill a large stone jar or a granite kettle. Cover and place it in the oven and while you are about your other work it will be cooking without your attention. It may be poured when thoroly cooked into scalded jars without adding sugar, and sealed for use in the winter for pies or to be sweetened for sauce. Or you may add the sugar before canning it. Allowing it to cook just long enough to thoroly dissolve the sugar.

One can of shredded or chopped pineapple added to four quarts of the rhubarb cooked ready for canning gives a delightful flavor.

One quart of raspberries added to two or three quarts of rhubarb makes another pleasant variety. Some also add blueberries to the rhubarb.

Mock Lemon Pie

Chop enough rhubarb to make a good cupful. Beat the yolks of three eggs with one cup of sugar and a heaping teaspoon of flour. Stir the rhubarb into this and bake in one crust. When done cover with maringue made of the whites.

Pie Plant Conserve

(Very nice)

Ten cupfuls pie plant, eight cupfuls sugar, three oranges, juice and rind, one lemon, pulp and juice only, one-fourth pound almonds blanched and chopped fine, a little salt. Boil the orange rind in three different waters; chop fine and add to the above. Boil the whole twenty-five minutes.

Rhubarb Charlotte

Stew rhubarb slowly until it can be pressed thru a sieve. For each pint allow one cupful of sugar, and one-third box of gelatine dissolved in just enough cold water to cover; then add the fruit, and when nearly cold and commencing to jelly add-one-third its bulk of stiffly whipped cream. Turn into a wet mold and set in a cold place to harden. By omitting the cream and adding the stiffly beaten whites of four eggs to this mixture it becomes a sponge.

Rhubarb Jelly and Whipped Cream

Skin and cut one pound of rhubarb into small pieces, put in a saucepan with one cup sugar and one pint water. Cook until soft but not broken. Soak two tablespoonfuls of gelatine in one-half cupful of cold water until soft, then add the hot rhubarb, with two tablespoonfuls of lemon juice. Place in a mold and thoroly chill. Serve in squares with whipped cream or a soft custard.

Jellied Veal

Take three or four pounds of lean veal and boil it in a very little water until tender. Pick it very fine; put in a mold; season with salt and pepper to taste. Put over it a layer of chopped, hard-boiled eggs; add the water in which the veal was boiled and set in a cold place to jelly.

Ice Cream

Scald (not boil) three pints of milk and one and one-half cups sugar. When cold add one quart of cream and the whites of three eggs beaten stiff. Flavor to taste and freeze. If your cream is not rich, add a level tablepsoon of gelatine, previously soaked, to the scalding milk.

Ice Cream

One quart of cream, one pint of milk, one and one-half cups of sugar, two eggs. Flavor to taste. Put into the freezer and freeze.

Frozen Pudding

Mix together one cup of maple syrup, yolks of four eggs. Let come to a boil until it thickens. Let this cool. Then add two cups of whipped cream. Beat all together good, then add whites of eggs, put this into freezer, pack like ice cream, but do not turn can, only stir pudding once in a while until frozen. This can be made day before using.

Soft Ginger Bread

One cup of sugar, butter the size of an egg, two eggs, one cup of molasses, one cup of sour milk or cream, one tablespoonful of ginger, two teaspoonfuls each of cinnamon and cloves, one and one-half teaspoonfuls of soda. Mix to the consistency of cup cake.

Egg Souffle

Three eggs beaten separately. Add gradually to the yolks five tablespoons sifted flour, alternate with one pint milk, and little salt. Beat till perfectly smooth, then stir in beaten whites. Pour into a small baking dish, and bake 20 minutes.

Scotch Woodcock

Three-fourths tablespoon butter, three-fourths tablespoon flour one-eighth teaspoon salt, little white pepper, two hard boiled eggs, one-half cup thin cream or milk. Melt the butter, add the flour, salt and pepper, then the cream gradually. Add eggs chopped fine. Let heat until it thickens. Serve on toast.

Macaroni

Boil in salted water for twenty minutes, two-thirds of a cup of macaroni, broken in pieces. Make a cream sauce of two even tablespoons butter, two even tablespoons flour, one-pint of sweet milk. When smooth like gravy add four tablespoons of grated cheese and one egg. Stir in the macaroni. Put in a baking-dish, sprinkle with bread crumbs and brown in the oven.

MOUND CITY
HORSE SHOE BRAND
TRADE MARK
PAINTS & VARNISHES
PRESERVE & BEAUTIFY

Why "Mound City" House Paint HOLDS Its Gloss

WHY do you see so many dull, faded-looking houses?

The trouble with such houses is that they are Oil-hungry. They are painted with a paint that has not enough Linseed Oil in it—a paint that never *could* have enough Oil in it on account of the character of the pigments used.

The best Paint *must* do two things. It must preserve and beautify. Do you know that Linseed Oil is *the* great preservative in Paint and that if it were not for the sake of appearance, you could give your house a coat of pure Linseed Oil, and it would be protected?

The solid part of Paint (Strictly Pure White Lead, Strictly Pure Zinc, and, in some Paints, baser metals) acts as beautifier only.

Strictly Pure Zinc absorbs more Oil than any other pigment and that is the reason for its use in Horse Shoe Paint. WHITE LEAD is used for its covering qualities, and ZINC for its *Oil-carrying* capacity.

And Oil-carrying capacity is what your Paint *must have* if your property is to be protected.

Horse Shoe Paint, while it covers and beautifies the surface thoroughly, is made of pigments that carry so much oil, that the *first* coat satisfies the oil-hunger of the wood leaving the second coat to gloss, harden, protect, and beautify.

That's why Mound City Horse Shoe Brand House Paint HOLDS its gloss.

Mound City Paint & Color Co.

GOOD MAKERS OF GOOD PAINTS

St. Louis, U. S. A.

NORRIS B. GREGG, President WM. H. GREGG, Jr., Vice-President E. H. DYER, Secretary

10,000 Cars at $1,055

To Introduce Reo the Fifth

By R. E. Olds, Designer

TO THE THOUSANDS WHO ARE BUYING

I am not writing this to sell more cars. The present demand taxes our utmost capacity. And the cars in use will sell our future output better than words of mine.

In all my experience of 25 years I have never seen a success like that of Reo the Fifth. I have never seen a car so popular.

What I have to say now is to you who are buying, largely through faith in me.

I want you to know that, despite this rush, there are hundreds of us watching every car. We are giving more than we promised.

And you who took my word—who are buying first—are getting an underprice.

JUST THE START

Reo the Fifth is not built for a season. The present demand is just the beginning.

This car, remember, is the final result of 25 years spent in car building. It marks my limit—the very best I can do. And no car of the future can greatly improve on it.

The cars we sell now are sent out to sell others—to create reputation for Reo the Fifth. And you may be sure that not a car goes out until we know it is utterly perfect.

OUR COSTLY CARE

We analyze the steel that goes into this car. Every part is inspected over and over. Every part with a flaw is rejected.

Every important part is put to radical test before it goes into the car.

The engines are tested for 48 hours. The finished cars are given more severe try-outs than in any other factory I know.

Parts are ground over and over to get utter exactness. Absolute silence in every part is demanded.

Each body is finished in 17 coats. The upholstering is perfect. To every part we give the final touch, regardless of time or cost.

For each of these cars is a salesman. Each will tell to hundreds of people the story of Reo the Fifth. And all our success in the future depends on the tale they tell.

THE UNDERPRICE

There was never a car so underpriced as Reo the Fifth at $1,055. Every man knows this who makes any comparison.

This price is ridiculous. It is too low to endure. The coming advance in the cost of materials is bound to send it soaring.

But we are content to sell 10,000 cars without regard to profit. So the present price will doubtless continue during the spring demand.

It goes to original buyers—to the men who first come to this car. And they will create our future market. Their cars will be our future advertisements.

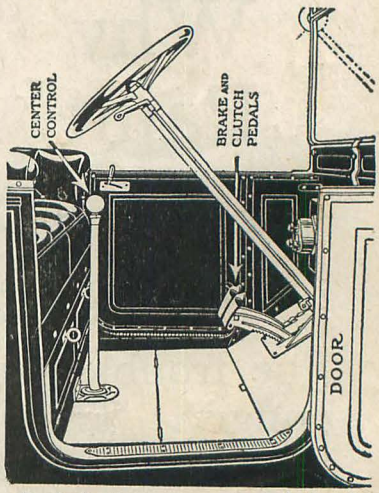
You early buyers are getting an inside price, and I am glad to know it. But men who expect the present price to continue are bound to be disappointed.

THE CENTER CONTROL

This Year's Best Innovation

The success of Reo the Fifth is largely due to our new center control. Here, for the first time, we get rid of all side levers. Both doors in front are clear.

All the gear shifting is done by moving this center lever less than three inches, in each of four directions. It is done with the right hand.



Both brakes are operated by foot pedals, one of which also operates the clutch.

This arrangement permits of the left side drive, heretofore possible in electric cars only. The driver sits, as he should sit, close to the cars he passes and on the up side of the road.

The old side drive will appear very awkward when you once see this.

1,000 DEALERS

Reo the Fifth is sold by dealers in a thousand towns, so everyone can easily see it.

Our catalog shows the various bodies and gives every detail. Ask us to mail it to you. Address

R. M. Owen & Co., General Sales Agents for Reo Motor Car Co., Lansing, Mich.

Canadian Factory, St. Catharines, Ontario

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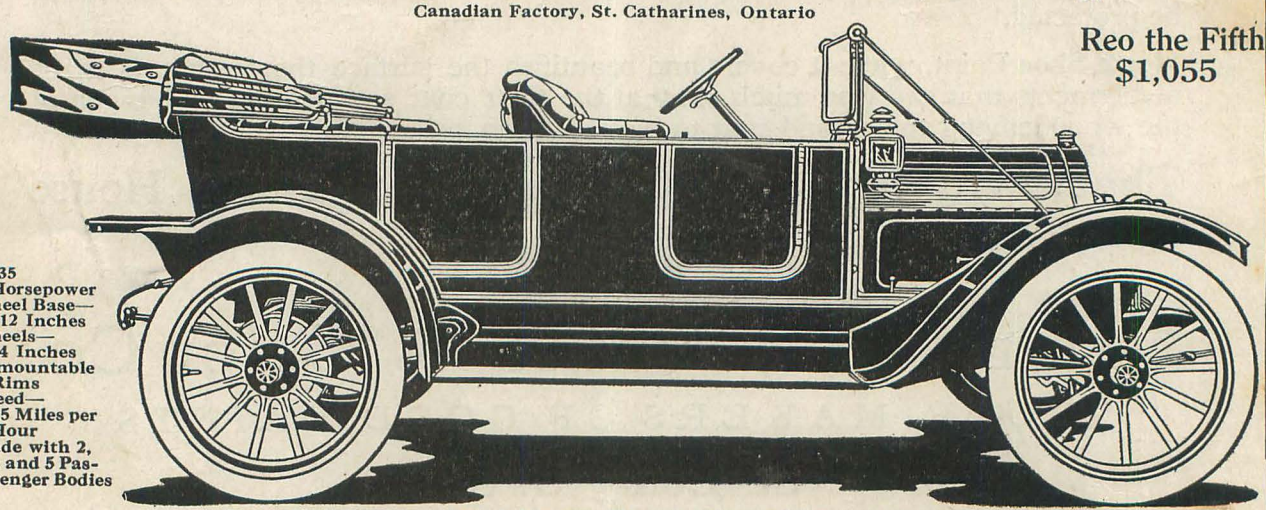
$1,055



30-35 Horsepower
Wheel Base—112 Inches
Wheels—34 Inches Demountable Rims
Speed—45 Miles per Hour
Made with 2, 4 and 5 Passenger Bodies

Top and windshield not included in price. We equip this car with mohair top, side curtains and slip-cover, windshield, gas tank and speedometer—all for $100 extra. Self-Starter, if wanted $20 extra